



University of **HUDDERSFIELD**

University of Huddersfield Repository

Onol, Isil

Haptic interaction with visual information: Tactile exhibition as inclusive interface between museum visitors and the Bronze Bust of Sophocles

Original Citation

Onol, Isil (2011) Haptic interaction with visual information: Tactile exhibition as inclusive interface between museum visitors and the Bronze Bust of Sophocles. Doctoral thesis, University of Huddersfield.

This version is available at <http://eprints.hud.ac.uk/id/eprint/16817/>

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

<http://eprints.hud.ac.uk/>



HAPTIC INTERACTION WITH VISUAL INFORMATION:

Tactile exhibition as inclusive interface between museum visitors
and the Bronze Bust of Sophocles

Isil Onol

A thesis submitted to the University of Huddersfield in
partial fulfilment of the requirements for the degree of
Doctor of Philosophy

December 2011

Haptic interaction with visual information:

Tactile exhibition as inclusive interface between
museum visitors and the Bronze Bust of Sophocles

Isil Onol BA(Hons), MSc

A thesis submitted to the University of Huddersfield
in partial fulfilment of the requirements
for the degree of Doctor of Philosophy

December 2011

Acknowledgments

It is a pleasure to thank the many people who made this doctoral thesis possible. First, and above all, I would like to thank my main supervisor (and Director of Studies) Dr Steve Swindells for his constructive and motivating advice. His support has been invaluable on both an academic and a personal level, for which I am extremely grateful. I would also like to take this opportunity to express my sincere gratitude to my external supervisor Ann Marie Shillito, my initial Director of Studies Paul Atkinson and my secondary supervisor Derek Hales for their support and critical input especially in the early days of my research.

This work was supported by an HEFCE studentship and funds from internal funding schemes of the University of Huddersfield. I am grateful for this assistance. Also, I much appreciate the support from all the sponsors, participants, advisors, student-volunteers and artists that made the Tactual Explorations project possible. Huge thanks to all the photographers and authors that took part in realising the Haptic Vision & Tangible Images project for providing such creative input. My special thanks goes to Lynn Cox for her expert advice on accessibility, and all the participants who gave me their invaluable insight on visual impairment and shared their experiences with me.

In addition to above, I am truly indebted to my wonderful sister Isin Onol, my dearest friend Zeynep Dagli and my mother for giving me the encouragement when I most needed it. My endless thanks goes to Paul Castro and Caglar Kimyoncu for their practical help as well their friendship throughout the years. I must also mention that I am thankful to Ziya Azazi and Matthew Pitts for their friendly advice which gave me that extra courage to continue.

And, my acknowledgement would not be complete without mentioning my dearest Arturas for the great deal of support and endless patience that he gave me at all times; and my dad who did not live long enough to see the end result but always believed in me. I have been very lucky to have friends, family and colleagues to help me through this work. I thank you all for being there...

Abstract

Through creative practice research this thesis investigates the concept of touch and its application to museums with the process defined as 'practice of touch'. The main practical outcome of this thesis is an interface between the museum visitor and an untouchable museum object as part of the object interpretation. The implementation of this idea is realised with the 'Tactual Explorations' project. The format of this project is a tactile exhibition consisting of virtual and conventional artworks combined. The subject of the study focuses on interaction between museum visitors and exhibits in order to create an accessible and tactile solution around museums' 'do not touch' policy; without being limited to but being especially for blind and partially sighted visitors. The reason behind paying special attention to these members of the audience is the significance of the sense 'touch' in communicating with the world around them.

While the main objective of this research is to gain more understanding of the concept of 'touch', on a deeper level it investigates whether or not a haptic interaction with untouchable visual information can be achieved with the aid of a creative interface between the museum visitor and an untouchable museum exhibit. By using this creative interface, the aim of the research extends to gaining a better understanding of touch through curating with information design and artistic methods. The purpose behind the idea is to form an inclusive museum experience free from assumptions of just one interpreter without rejecting the traditional methods of object interpretation. The practical outcome enhances dialogue with the existing information by paying special attention to tactile properties of a museum object through a set of artworks. The project is supported by other practical experiments in order to understand the value of visual/photographic information attached to an untouchable object and involve other scholars and artists in interpreting this information tactually.

While accepting museums' policy of 'do not touch', the praxis of this thesis is proposed as a method of interpretation that aims to bring in the 'missing interactivity of touch' through an engaging tactile exhibition of physical and virtual artworks made by various artists. In contrary to more common approaches of involving artists in interpreting museum objects, in this model created works are not inspired by the original, but directly based on its texture information in order to create haptic interaction, without using a direct replica or embossed copies. In other words, this interface is presented as an addition to the object's formal interpretation, not to replace it.

The research adopts creative practice research methodology in general; and realises it with a reflective and participatory approach borrowed from action research within interpretive research paradigm. The main research strategy deployed is practice-led. Rather than staying in the boundaries of qualitative research, the study takes guidance from the manifesto of performative research which is declared as an alternative to the qualitative and quantitative research methodologies, by offering creative approaches to conducting a research project.

Copyright Statement

- i. The author of this thesis (including any appendices and/or schedules to this thesis) owns any copyright in it (the "Copyright") and s/he has given The University of Huddersfield the right to use such Copyright for any administrative, promotional, educational and/or teaching purposes.
- ii. Copies of this thesis, either in full or in extracts, may be made only in accordance with the regulations of the University Library. Details of these regulations may be obtained from the Librarian. This page must form part of any such copies made.
- iii. The ownership of any patents, designs, trade marks and any and all other intellectual property rights except for the Copyright (the "Intellectual Property Rights") and any reproductions of copyright works, for example graphs and tables ("Reproductions"), which may be described in this thesis, may not be owned by the author and may be owned by third parties. Such Intellectual Property Rights and Reproductions cannot and must not be made available for use without the prior written permission of the owner(s) of the relevant Intellectual Property Rights and/or Reproductions.

Table of Contents

Abstract.....	3
Copyright Statement.....	4
Table of Contents.....	5
List of Figures	7
List of Tables	9
Contents of the DVD.....	10
Previous Presentation	11
Key to Continuity & Typographic Decisions.....	12
CHAPTER 1: Introduction	15
1.1 What is This Thesis About?	16
1.2 Research Objectives and Thesis Questions.....	18
1.3 Originality and Contribution to Knowledge	19
1.4 Boundaries of the Research: What This Research is 'Not'	21
1.5 My Audience and Viewers of the Research	23
1.6 Thesis Structure	26
CHAPTER 2: Literature Review	31
2.1 Seeking the Human Element.....	32
2.2 Importance of Touch.....	32
2.3 Inclusive Approach / Universal Design	41
2.4 'Do Not Touch' Policy	45
2.5 Learning at Museums, and Access for Visually Impaired Visitors	47
2.6 Object Interpretation and Importance of the Object	51
2.7 Exhibition Visits and Other Tactile Exhibitions	53
2.8 Haptic Technologies and Its Applications	56
2.9 Museum Technologies and Augmented Reality (AR) Research	60
2.10 Summary of the Chapter.....	62
CHAPTER 3: Methodology & Methods	65
3.1 Approach to Methodology	66

3.2	My Practice in Action: Curatorial & Artistic Methods	68
3.3	Creative Practice Research Methodology: A Selective Definition	77
3.4	Performative Research: Haseman's Third Paradigm.....	83
3.5	Interpretive Research: Reflective Practice.....	85
3.6	Triangulation and Methods for Data Analysis	87
3.7	Writing as Practice; as Part of the Methodology	90
3.8	Summary of the Chapter	95
CHAPTER 4: Tactual Explorations Project (Practice).....		99
4.1	'Tactual Explorations' as Tactile Interpretation	100
4.2	Background Work and Project Management	103
4.3	Selected Museum Object: Bronze Bust of Sophocles.....	113
4.4	Final artworks and their making	114
4.5	Visitors and Haptic Interaction	145
4.6	Workshops.....	146
4.7	Results of the project.....	149
4.8	Main Conclusions to Tactual Explorations.....	152
CHAPTER 5: Other Projects & Experiments (Practice)		155
5.1	<u>Project 1</u> : User-feedback Experiment	156
5.1.1	Process.....	156
5.1.2	Final Stage Questions / Observations:	158
5.1.3	Results / Conclusions to the User-feedback Exercise.....	159
5.2	<u>Project 2</u> : Touching the Bronze Bust of Sophocles	161
5.2.1	Museum Visits.....	161
5.2.2	Interacting with the Direct Replica	165
5.2.3	Conclusions to the Touching the Bronze Bust of Sophocles	166
5.3	<u>Project 3</u> : Haptic Vision & Tangible Images.....	172
5.3.1	Process.....	173
5.3.2	Mental Touch vs. Haptic Vision	179
5.3.3	Haptic vision photographs and essays	181
5.3.4	Conclusions to Haptic Vision and Tangible Images Experiment.....	185
CHAPTER 6: Critical Discussion & Analysis		187
6.1	To Make, To Mean.....	188
6.2	Practice of Touch & 'continuous' human	189
6.3	The Lonely Object	190
6.4	Problem With Direct Replicas	193

CHAPTER 7: Conclusion.....	197
7.1 Brief Summary of The Thesis: Recap	198
7.2 Contributions to Knowledge.....	198
7.3 Outcomes & Evaluation	199
7.4 Main Results	201
7.5 How did Tactual Explorations affect the participating artists	202
7.6 Research Behaviour & System of Methods Re-Visited	203
7.7 Relevance & Differentiation to Past Research.....	204
7.8 Topics for Future Work	206
References.....	209
Appendices	217
APPENDIX 1: Re-definition of Terms & Keywords	219
APPENDIX 2: Five Tests of Credibility	223
APPENDIX 3: Images from the first user-feedback experiment.....	227
APPENDIX 4: Tactual Explorations Artist Brief	229
APPENDIX 5: Tactual Explorations Workshop Questionnaire.....	237
APPENDIX 6: Tactual Explorations Exhibition Questionnaire.....	239
APPENDIX 7: Essays & Photographs for Haptic Vision and Tangible Images.....	243
APPENDIX 8: Published work in the 'Touch in Museums' Book	263
APPENDIX 9: Tactual Explorations Work in Progress Booklet	281

List of Figures

Figure 7-1(a): Rapid prototyped Sophocles for the Tactual Explorations exhibition.....	14
Figure 1-1: Graphic representation of the central theme and 'who views this research.	26
Figure 1-2: Thesis structure diagram showing the navigation and links to chapters within the research components	27
Figure 2-1: Touch-based teaching at the Hatchobori	34
Figure 2-2: Images of Angelica's (left) and Christ's (right) healing by touch	37
Figure 2-3: Unlocking the value of cultural heritage resources; DigiCULT four-layer model (DigiCULT 2005)	49
Figure 2-4: Naoto Fukasawa's Juice Skin exhibit, and visitor interaction.....	55
Figure 2-5: Shin Sobue's Tadpole Coasters exhibit, and visitor interaction	55
Figure 2-6: Hope Hippo (2005) Mud Sculpture by Jennifer Allora & Guillermo Calzadilla, 51st International Venice Biennial (Artnet Magazine 2005)	56

Figure 2-7: June, one of the blind participants of the study examining the replica	64
Figure 3-1: Preparing the gallery for the Tactual Explorations exhibition Private View.	70
Figure 3-2: Gallery floor plan for Tactual Explorations exhibition	72
Figure 3-3: Exhibition project model.....	73
Figure 3-4: Scanning the replica bust with Faro scanner at Metropolitan Works	74
Figure 3-5: My tactile study of the surface; a two-piece work entitled ‘Sophocles Now & Then’	76
Figure 3-6: Peter is gaining a sense of dimensions and placement of the original bust .	78
Figure 3-7: Margo is gaining a sense of dimensions and placement of the original bust	78
Figure 3-8: Triangulation in analysis and use of multiple perspectives (developed from Gray and Malins’s diagram (2004)).....	87
Figure 4-1: Tactual Explorations Exhibition at the Northlight Gallery.....	101
Figure 4-2: Visitors examining Lynn Cox’s artwork ‘The Wiry Old Man’.....	102
Figure 4-3: A young visitor examining Deborah Gardner’s wax artwork ‘Viscid Head’	102
Figure 4-4: A visitor with my selected object at the British Museum.....	105
Figure 4-5: Testing 3D model of sSophocles on multi-finger Haptics, courtesy of Alastair Barrow at the Interactive Systems Research Group, University of Reading	111
Figure 4-6: Bronze Bust of Sophocles at the British Museum	115
Figure 4-7: Replica bust of the Bronze Bust of Sophocles	115
Figure 4-8: Tom Ainsworth’s work(s) ‘Hair, and Expression’	121
Figure 4-9: Carolyn Alexander's work ‘Unravelled’	123
Figure 4-10: Louise Atkinson's work ‘Hairball’	125
Figure 4-11: Lynn Cox's work ‘The Wiry Old Man’	127
Figure 4-12: Deborah Gardner's work ‘Viscid Head’	129
Figure 4-13: Isil Onol's work ‘Surface’	131
Figure 4-14: Isil Onol's work ‘Haptic Bust of Sophocles’	133
Figure 4-15: Murat Ozkasim's work ‘Takes a lot of Licking’	135
Figure 4-16: Megha Rajguru’s work ‘Sophocles. Circa 2000’	137
Figure 4-17: John Swindells's work ‘Inverted Head (Sophocles)’	139
Figure 4-18: Zoha Zokaie’s work ‘Contours of the Face’	141
Figure 4-19: Zoha Zokaie’s work ‘The Tale of its Touch’	143
Figure 4-20: Work in progress – ‘Viscid Head’	144
Figure 4-21: Work in progress – ‘Inverted Head (Sophocles)’	144
Figure 4-22: Visitors engaging with the haptic simulation	145
Figure 4-23: A participant creating work at Louise Atkinson’s workshop ‘3D Collage’	146
Figure 4-24: Lynn Cox instructing participants by touch at her workshop ‘Tactile Drawing’	146
Figure 4-25: ‘Sensory Stories’ workshop with Amy Hirst.....	147

Figure 4-26: Some of the work created at the 'Drawing by touch' workshop.....	147
Figure 4-27: A journalist taking notes at the Private View	154
Figure 4-28: Visitors interacting with the 'Contours of the Face' exhibit	154
Figure 5-1: The three objects used in user-feedback experiment.....	157
Figure 5-2: A participant interacts with the hidden objects at the User-feedback exercise	158
Figure 5-3: Amelia and Peter visiting the original bust at the British Museum	168
Figure 5-4: June at British Museum, interacting with the original bust.....	168
Figure 5-5: June's arrival to room 22 at British Museum	169
Figure 5-6: Margo's arrival to room 22 with my assistance	169
Figure 5-7: Peter examining the replica, at RNIB in London.....	170
Figure 5-8: June is examining the replica, in her kitchen in North London	170
Figure 5-9: Amelia and Peter are being given spatial information, at the entrance of the Room 22	171
Figure 5-10: Lynn is examining the replica	171
Figure 5-11: Contact sheet from Haptic Vision group, page 1 of 8 (currently).....	176
Figure 5-12: Graph showing importance level of all of the texture properties selected by participants.....	178
Figure 5-13: Fiona Candy's selected photograph by Saskia Zeller	182
Figure 5-14: Michael Szpakowski's selected photograph by Emma Bennett	182
Figure 5-15: Zeynep Dagli's selected photograph by Lucas Compas	184
Figure 5-16: Gillian Allison's selected photograph by Ben Grillon	184

List of Tables

Table 3-1: My multiple roles reviewed in relation to individual projects and data gathering through action	70
Table 3-2: Summary of my methodologies. Table developed from Yee's model for PhD Examples Summary (Yee 2009)	97
Table 4-1: Categorisation of tactile properties, adapted from MyLinden & McCall's table (2002)	117
Table 4-2: List of the commissioned artists of the pilot study and their artwork titles	119
Table 4-3: Five questions asked to 30 randomly selected visitors	151
Table 5-1: Observation results of the User-feedback exercise	160

Contents of the DVD

Find enclosed on the inside of the back cover a disc containing additional documents, images and multimedia files. Please note, this is a DVD data disc compatible for computers, not DVD players.

1) Videos: 5 Films, documenting the practice

These five films were timed to play simultaneously on five screens. Therefore the visits to the British Museum appear on two separate files. Two of these are on Screen_02.mov, and the other two on Screen_05.mov. There are also unedited longer versions of every tape in the Raw Material folder.

Screen 01.mov:

- Tactual Explorations Artworks Slideshow

Screen 02.mov:

- Tactual Explorations Work in Progress Slideshow
- Tactual Explorations Workshops
- Tactual Explorations Artist Discussion at the Northlight Gallery

Screen 03.mov

- Visiting Bronze Bust of Sophocles (with June)
- Visiting Bronze Bust of Sophocles (with Peter)

Screen 04.mov

- June examining the replica at her house
- Peter examining the replica at RNIB

Screen 05.mov:

- British Museum & Bronze Bust of Sophocles Slideshow
- Visiting Bronze Bust of Sophocles (with Margo)
- Visiting Bronze Bust of Sophocles (with Amelia)
- Scanning Sophocles Slideshow

2) Audio: Tactual Explorations Audio Guide

3) Images: Photographs of Research Activities

- Tactual Explorations Supplements
- Haptic Vision Contact Sheets

4) Extra Documents: Additional Supporting Documentation

Tactual Explorations Extras

- Haptic Viewer
- Flyer (Back & Front)
- Creative Review Article
- Poster
- Press Release
- Legal documents
- Exhibition review
- Volunteer's timetable
- Workshops

Previous Presentation

Some of the work described in this thesis has been published¹ and/or presented as follows:

Research presentation

Tactual Explorations & PhD Research
Senseable City Lab Seminars, MIT, Cambridge (USA)
10 August 2010

Research presentation

Obtaining Industry Sponsorship for Ph.D Research
Design Research Centre, The Faculty of Art, Design & Architecture, Kingston University
London (UK)
26 January 2009

Book Chapter

Onol, I. (2008). Tactual explorations: A tactile interpretation of a museum exhibit through tactile artworks and augmented reality. In: Chatterjee, H. J. Touch in Museums: Policy and Practice in Object Handling. New York: Berg. p.91-106

Project Presentation (talk and poster)

Tactual Explorations
NODEM 06 - Digital interpretation in Art and Science Museums and Heritage Sites,
University of Oslo (Norway)
7 December 2006

Paper Presentation

Tactual Explorations
UCL Museums & Collections' "New technologies for enhancing object interpretation: interactives, haptics and interface technologies" workshop, University of Central
England, Birmingham (UK)
1 December 2006

Seminar presentation

Haptic Interactions with Museum Exhibits
'Engaging With Practice' Seminar: Creative Technologies, University of Huddersfield,
Huddersfield (UK)
19 February 2006

¹ A copy of this chapter from the book (Chatterjee 2008) is provided in the Appendices. Please note the enclosed copy slightly defers from the published version, however only in terms of several spelling amendments (i.e 'art works' changed to 'artworks' on all occurrences). The rest of the copy and images are exact. This is because the publishers only provided the digital copy of the final draft to authors; the final proofreading was done manually on the hardcopy.

Key to Continuity & Typographic Decisions

Single Quotation Marks: Particular terms and phrases as well as emphasis on words are presented in single quotation marks. Also, quotes within quotes can appear in single quotation marks. In addition to this, the first occurrences of the 'Tactical Explorations' in the Abstract and Introduction appear in single quotation marks, but then continues without any marks or italics for the rest of the thesis for ease of reading and to keep the flow intact, as this title is repeated large number of times in the text.

Double Quotation Marks: Used for short direct quotations or words/phrases from direct quotations only.

Italics: All chapter names in the body text and referrals to sections within thesis appear in italics. This is to support readability and to avoid excessive use of single quotation marks.

Names / Surnames: In order to distinguish literature sources from participants, all participating artists, visitors, volunteers are referred to with their first names and surnames for introduction purposes first, then continued using their first names only in the text. In the case of experiments or arranged observations, only the first names of the participant are used with their permission. For references in the thesis, the Harvard method was used as advised by the University of Huddersfield guides, and the sources are cited as (Surname Year).

We regress and we progress, way beyond all sense of sight, from the most primitive to the subtlest realm of the tactile. Everything is given to us by means of touch, a mediation that is continually forgotten.

Luce Irigaray, Divine Women



Figure 7-1(a): Rapid prototyped Sophocles for the Tactual Explorations exhibition
8.5cm x 7.5cm x 6.5cm

CHAPTER 1: Introduction

Overview

This chapter first introduces the thesis topic; then illustrates the thesis-structure by providing a prologue to individual chapters and the layout of the document as a whole. The chapter then introduces proposed outcomes of the research, and the background to its existence; and identifies thesis objectives with research questions. It also presents a declaration of originality. The content of the chapter then moves on to elucidate what this research is not, while drawing the boundaries of the research; followed by definition of audience and anticipation of those this research will be viewed or referred by.

1.1 WHAT IS THIS THESIS ABOUT?

One of the most fundamental issues in interacting with museum exhibits is the prohibition of touch. It is backed up with extensive research and years of experience that over time this impermissible act can cause irreversible damage to valuable objects. Therefore museum visitors today are accustomed to seeing the 'do not touch' signs that are painstakingly placed in most museums worldwide. Touch however remains a major sense; and a human's main instinct when it comes to observing an unknown object usually is to want to feel it through touch. My research is directly interested with this sense and investigates its role by using touch as the means for practice.

In order to propose a solution to the problem, my thesis offers an interface providing alternative tactile interaction between the museum visitor and the museum object, through creative practice research. While the main objective of this research focuses on gaining more understanding of the concept of 'touch', the practice of the study is to design a new form of inclusive interface between visitors and museum object in order to create more accessible object interpretation. This interface is not limited to, but designed with blind and partially sighted visitors' needs in mind. The format of the interface is a tactile exhibition that replicates the surface information of selected museum object by combining virtual and conventional artworks as new exhibition pieces. These individual works represent the different tactile properties of this precious object; each created by various artists from different backgrounds as a collaboration work. The selected museum object for this thesis is the Bronze Bust of Sophocles from the British Museum's Greek and Roman Antiquities collection, and the implementation of the interface concept is entitled 'Tactual Explorations' which has its own chapter as the main practice element of this thesis. Through analysing the actions and results of the Tactual Explorations as well as other supporting experiments that took place as part of this research, this thesis investigates the understanding of touch further, and declares this process as 'practice of touch'.

An academic inquiry that involves object interpretation is usually studied by academics in the fields of Museology, Art History and in some cases Material Science. This study, on the other hand, brings a new insight to the topic from an information designer's curatorial approach combined with artistic experience through creative practice. The literature review reflects these fields as well as the relevant developments in Augmented Reality and the field of Haptics to understand the current and future possibilities of using emerging technologies in museum settings. That being said, technology is only considered to be just another media in this study to convey texture within this

research; therefore the actual practice of using haptic devices are kept limited to a modestly advanced Phantom Omni by SensAble Technologies¹. In other words, the research does not suggest haptic technologies as a method to interact with museum objects; instead it addresses its limitations but integrates an example of this technology to be used collectively with conventional art-making methods.

Since the communication medium for the design solution is defined as artworks, artists' role and involvement in re-interpreting museum objects through technology and tactile communication are contextually and culturally analysed; case studies and experimental real-life events are created in order to collect the relevant data for this thesis. The problem is approached from the hypothesis that 'inclusive and more accessible object interpretation can be achieved by addressing the needs of under-represented museum visitors without excluding the majority; and also by introducing artists' representation of tactual properties of the object being interpreted. To support this idea, the notion of 'object' was also studied further.

The study is formed of experimental design processes and combined methods that do not reflect any singled-out research method or methodology within one discipline. Instead, proven techniques and methods are borrowed from previous research into the field and topics relevant to this inquiry, in order to support the experimental approach.

This research came about mainly as a result of my MSc dissertation project Smart Shoe² which itself was formed through my background in Information Design and an ongoing passion for achieving information that is truly accessible and inclusive. The main objective of that project was to provide 'optional information for everyone'³ while questioning the assumptions of the designer in addressing their end-users' needs according to their disabilities. My interest in Haptics started with the creation of this 'shoe' idea and its prototype that used basic smart materials, allowing visually impaired people to interact with traffic signals through tactile sensations on the foot, without the need for bumps on pedestrian crossings that are a potential hazard to wheelchair users with spinal pain. This past project brought me to reconsider inclusivity guidelines and

1 A Phantom Omni was purchased for this research especially, as a result of successful funding application.

2 A wearable tactile interface between visually impaired people and traffic crossings

3 I have used single quotation marks in this thesis on specific words not for emphasizing authority or tone, but to identify a set of words as a theme, or to illustrate a vocabulary term. I used double-quotation marks only for direct quotes and when using special terms chosen by the author cited

employ the concept within a practice-based research to test other practical aspects that can be involved in public settings like museums; where constant dialogue with untouchable objects occurs. In other words, this urge to shift my understanding of optional information from guidelines to real-life settings created pathway to this research.

Since practice-led research is an established autobiographical research methodology (Baird *et al.* 2000), this thesis employs a writing style that favors the use of first person pronouns on chapters or sections involving practice and methods. During the making of individual projects related to this research, a reflective practice approach is taken and this approach is realised with performative actions. Because of this reason, the researcher's identity and experience remains vital to this study.

1.2 RESEARCH OBJECTIVES AND THESIS QUESTIONS

The main objective of this research is to investigate whether or not a haptic interaction with untouchable visual information can be achieved with the aid of a creative interface between the museum visitor and an untouchable museum exhibit. By proposing a creative interface, the aim is to gain a better understanding of curating through information design and artistic methods. The purpose behind the idea is to form an inclusive museum experience free from assumptions of just one interpreter, without rejecting the traditional methods of object interpretation.

The research outcome is designed to enhance dialogue with the existing information by paying special attention to tactile properties of a museum object through a set of artworks. It is also within the objectives of this thesis to study purely visual/photographic information attached to an untouchable object and involve⁴ other scholars and artists in interpreting this information tactually. Application of reflective practice and performative methods aim to bring this research to life by investigating through experience and experiments. This performative approach also is set to shape any research behaviour attached to gathering data from practice.

⁴ This involvement is not for research collaboration.

A very important question that shaped the background of this research is: **Is it possible to achieve an accessible object interpretation⁵ through a tactile exhibition as an interface between museum visitors and a museum exhibit?** This question then looked at the methodological framework and asked further whether or not this objective could be realised through the 'practice of touch'. The following questions on the other hand formed the basis of the inquiry and helped the main research question to develop:

- ☐ Can interpreting museum objects through representative tactile artworks be an inclusive approach, and what is the role of artists in this interpretation?
- ☐ Is it possible to create an exhibition that uses an emerging technology as a tool, without making the technology the focus?
- ☐ By using haptic technology in a touch exhibition, can we enhance access to traditional art-form? With special consideration of the following:
 - ☐ What is wrong with the current touch tours in museums?
 - ☐ Why a direct replica of a valuable museum object is not necessarily meaningful to a visually impaired visitor?
 - ☐ Is there a way to create interpretations or access tools that are not full of the assumptions of a sighted interpreter?
 - ☐ What is the photographic information gathered by vision when looking at untouchables; does mental touch occur?
 - ☐ Can such exhibition provide opportunities for people with limited or no sight to have access to art exhibits?

All of these questions are addressed within the thesis through the practice work. They can be referred to in the chapters related to practice, as well as the Discussion & the Analysis chapter. They are also reflected on in the Conclusion chapter.

1.3 ORIGINALITY AND CONTRIBUTION TO KNOWLEDGE

The originality of this research is not limited to but is especially due to its presentation of a tactile exhibition to become a physical interface to the information on a museum object, by giving more importance to its texture description. Contrary to more common approaches of involving artists in interpreting museum objects, in this model the created works are not 'inspired' by the original, but directly based on its texture

⁵ There might be some logical questions raised here about what is being accessible; whether it is the object or the object interpretation. The sentence should read as "...accessible 'object interpretation' via inclusive exhibition". On the other hand, the object also becomes accessible as its interpretation would be.

information in order to create haptic interaction without using a direct replica or embossed copies ⁶. This leads to the main practical contribution of this research, the Tactual Explorations project, as a curation/exhibition-design process that involves artists to collectively interpret a museum object. This interpretation combines conventional artworks with emerging technologies in order to achieve a more comprehensive tactile experience. A haptic computer simulation takes place as part of the exhibition; however the project specifically avoids bringing the technology to the foreground to keep the importance of the human element and to focus on the actual object. In addition to this, the study invites visually impaired and sighted people to test its notions and outcomes in naturalistic style and real life situations instead of controlled research-lab environments.

Another element that makes this study distinctive is its use of creative practice through touch to be able to explore the Bronze Bust of Sophocles in detail, as this object was not studied on this level before. Through the Tactual Explorations project, an enhanced access to this object's surface information becomes available by widening the notion of inclusivity from 'include' to 'do not exclude'; while offering this inclusive information as an optional choice rather than a one-fits-all solution.

An important contribution of this research is its documentation of the research process as 'practice of touch' by following participants' interaction with the selected museum object within and outside the museum, as well as recording my research behaviour of taking active part in this process. While the practice of touch directs the hands-on aspects of the research, to follow this, the theoretical contribution of this research can be associated with the connection of inclusive design approach to object re-interpretation through 'thing theory' as well as 'fetishism strategy' by questioning people's tactile relationship with objects. In this relationship⁷, the untouchable museum object within a glass cage gets downgraded to being defined as a 'thing' (Brown 2001) rather than an object once/if its conditions for it to be interacted with by humans are not met. For example, the object can become an obstacle in a museum for someone without sight unless they have means to interact with it. Following up on this, the fetishism strategy then comes into the study, not from the conventional

⁶ As discussed in the Critical Discussion & Analysis chapter, replicas are not necessarily the best solutions to interacting with untouchable museum objects.

⁷ This is discussed in the Critical Discussion & Analysis chapters; and was touched upon in the Literature Review chapter.

understanding of fetishist approach of admiration for or obsession with objects, but from its reassurance of familiarity and reality. Free from the notions of worshipping and falseness that is common to fetishism, fetishism strategy on the contrary can actually be put in practice to enhance relationship with the knowledge through objects (Kaplan 2006). In the presence of a tactile interface placed between people and an untouchable museum object, the physicality of the interface takes the place of a familiar object, and becomes a bridge to the unknown which is something superior and more meaningful than itself. In practice of museum object interpretation, this leads to a better access to the original, therefore to a better understanding. The discussion concludes that the untouchableness of an exhibit presents a barrier; and one effective way to lift any anxieties or obscurities attached to this barrier is to introduce a physical interface to its existence.

As a result of the practical and theoretical elements together, the research offers a method of interpretation that aims to bring in the missing sense of touch through an engaging tactile exhibition of physical and virtual artworks made by various artists. This interface is proposed as an addition to object's formal interpretation, not to replace it. The main link that ties the practice and theory aspects of this research forms a contribution to the understanding of touch as a concept.

1.4 BOUNDARIES OF THE RESEARCH: WHAT THIS RESEARCH IS 'NOT'

It is not my intention, with this research, to provide an in-depth understanding of blindness and forms of visual impairment. There has been significant research done in these areas and the results of the multidisciplinary collaboration work continue to be published. For instance, Bates (1998) in her successfully completed PhD thesis, extensively covers the history of blindness as well as many theories attached to visual impairment; and defines many forms of blindness. Similarly Macpherson (2007) dedicates a large part of her ethnographic PhD thesis to an inquiry of blindness in philosophical platform while studying the physical English landscape. Some of these research projects are used in this thesis to add to the data, or at times are taken as starting point to an argument.

For the purpose of this research, any philosophical arguments I bring or defend my thoughts with will be limited to the common fact that 'touch' physically occurs and it

is not an endless phenomenon⁸. The mathematical and philosophical questions about whether it is really possible to touch an object will be totally unnecessary as I believe these kind of paradoxical approaches cannot offer any practical results for this research apart from engaging minds.

The outcome that this research is offering is not in any way a replacement to the way we visit museums. In this research the real presence is not ignored and virtual visits are not encouraged. Furthermore, the exhibition format offered is not a replacement for the actual museum object. The initial object will not be ignored. The artefact of the research is not a finished product but forms the main structure of a larger concept.

Unlike we see in some of the haptic simulations currently presented in museums (also mentioned in the Literature Review chapter), the solution offered through this research is not an interactive storage system that contains recorded and/or repeated information. The visitor experience suggested in my work is not about virtual touch; instead my entire research and its practice engage with the touch itself. At times, during this research, my practice involved holding the hands of a blind participant to guide them through the streets on the way to the British Museum, and to give sense of dimension by running our hands together on the prohibited glass case of the Bronze Bust of Sophocles in the museum.

The Tactual Explorations format that proposes to build an interface between a museum object and its spectator is not simply a touch-tour either. As opposed to what's commonly practiced in most tactile solutions in museums and galleries today, the artworks that form the elements of the Tactual Explorations exhibition are not replicas or direct representations of the original object, neither are they just artistic influences. They are purposefully and systematically created by studying the texture properties on the original object, the Bronze Bust of Sophocles. Artist's imaginative creativity on the other hand, was not dismissed at the time of production. For this reason, the works presented are not just objects but purposeful artworks.

⁸ For example, Zeno's 'dichotomy paradox' proposes that an object can never reach its destination as it will never travel the distance. A stone thrown at tree will never reach the tree as the stone first will have to half the distance to the tree, then the half of the remaining half and so on. This process never ends since the number of halves is infinite, therefore stone never hits the tree. The same paradox can easily be applied to touching an object; hand never travels the distance to touch the object. Derrida (2000 [2005]) also talks about the possibility of 'contact without contact'. However Derrida's ideas are included in the thesis from the point of view of importance of touching.

1.5 MY AUDIENCE AND VIEWERS OF THE RESEARCH

I intentionally place this discussion within the introduction chapter as I believe it is an essential part of setting the background to the study. It should not be considered as part of a methodology chapter. All references to roles in this sub-section are illustrated with relevance to the definition of the audience of my research. The actual chapter that focuses on my methods as well as roles I adopted will be the next one.

Because of its inclusive aspect, and the implementation of its practice-based elements for that matter, it would be ideal -if not necessary- to announce that the audience⁹ of this research is 'everyone'. However, in order to work methodologically and make good use of data, it became quite clear early in the research that it is vital to narrow down the audience to a smaller section of society. Nevertheless this realisation itself wasn't enough to solve my concern about being too exclusive especially when I was questioning other current design solutions for being that way.

In the beginning of the study, I had declared the audience of this research as 'visually impaired museum visitors'. It must be noted here that the main condition/problem that I address through my research is not 'not being able to see'¹⁰ but 'not being able to touch'. In fact, studying the act of touch keeps the condition of 'not being able to touch' not just a discussion, but a vital notion of this research. The rationale is that, this condition of being physically remote from an object remains the same for every spectator of an untouchable museum object regardless of their background or disability (limited/selected objects in the special 'touch' collections of museums for visually impaired people are excluded from this discussion). I must also point out that my research is not concerned with changing museums' 'do not touch' policy, but it is with the way museums provide access to these precious objects for their visitors. Since visually impaired people are the group most excluded from accessing these objects and I was looking for ways of including this group through applying haptic technologies to museums, it was logical to declare visually impaired people as my audience.

9 By 'audience' I do not mean the primary reader of this thesis. The word 'audience' in this work refers to the group of people which my research aims to serve and keeps in mind as end-user; including myself, the artists took part, and volunteer-attendees of user-feedback exercises, as in some cases we all became the participant therefore represented the 'audience'.

10 For this entry, the use of single quotations is for enhancing the tone, as opposed to other uses of the punctuation mark within this thesis.

Once the solution that was always there made itself apparent, I needed to identify not only an initial audience to focus on and learn from (in this case visually impaired museum visitors), but also to identify visitors of events and exhibitions that appealed to everyone as long as they were willing to take part. The following events and thoughts shaped my understanding of who this research has been talking to (for detailed conclusions please see individual projects and experiments):

My initial concern of providing a 'tactile interface' to an untouchable museum object for everyone that interacts with museum objects helped me define the initial end-user: museum visitors.

My first user-feedback experiment which involved sighted people only showed that visual information can be interpreted tactually, however we need input from visually impaired people.

The best way to reduce assumptions of being a sighted person as much as possible is to get guidance from people experiencing visual impairment and professionals studying the subject.

My public event Tactual Explorations offered an inclusive experience while offering a tactile exhibition to all, with a special focus on visually impaired users' needs. My observation of the attendees and discussions with artists made me realise that a balanced focus on sighted and visually impaired people's reaction and feedback to the event was vital.

As a secondary result of Tactual Explorations and the exercise of visiting exhibitions that followed it, the significance of sight in describing tactual properties became very strong. Therefore a shift in focus group became essential. I curated an online collection of images to study photographic evidence of tactual senses, and representation of the tangible in images. This enabled a conversation with scholars and artists, with special attention to 12 selected photographs from this collection.

In general, by concluding from the previous five points, this research focuses on and attempts to provide solutions for museum and exhibition visitors with special reference to blind and visually impaired people's needs and choices.

"Who is this Spectator, also called the Viewer, sometimes called the Observer occasionally the Perceiver?" asks O'Doherty (1999, p.39). Keeping them unattached to any artistic era or style, and purposefully bringing O'Doherty's question lightheartedly

back to the definition of my research audience, I too think it is important to classify each of the terms that refer to my audience, despite their interchangeable uses in gallery environments. This system of definition will separate audience, myself as the researcher, future researchers and participants in theory, but blatantly show how occasionally these roles can stand in for each other, depending on the purpose of the action; i.e. I as the researcher can become one of the participants because of my reflective practice, and subjects can become active readers. Because this approach creates a continuous loop around the researcher, I define the theme as central¹¹. The diagram on the next page (Figure 1-1) illustrates the dynamics and collisions of the roles and actions involved.

The roles are divided into two areas according to their function and/or aim as active and passive roles. Within these areas the parties involved in this research are connected to each section. The definitions of roles, actions and functions are as follows:

- ☐ **Researcher:** Author and practitioner of this thesis
- ☐ **Subject:** Person or focus group being examined (including artists that took part in projects)
- ☐ **Audience:** Who this research is designed for (not meaning the thesis reader)

Passive Role

- ☐ **Spectator:** A viewer of the events and projects within this study
- ☐ **Perceiver:** A person directly effected by the events and projects within this study (i.e. artists, volunteers, participants of workshops, exhibition visitors etc)
- ☐ **Reader:** Who this thesis can be read by. This can be divided into three categories:
 - ☐ Primary reader: The scholarly community (Murray 2006)
 - ☐ Secondary reader: People who refer to this thesis as a secondary source
 - ☐ Indirect reader: Readers who are presented this research as a result of events and projects within this study (i.e. researcher, subjects and audience)

Active Role

- ☐ **Observer:** A viewer who is actively seeking results; obtrusively or unobtrusively

¹¹ This definition is only for practical reasons to convey multiple roles and actions of myself as a researcher and to illustrate how other participant's roles do also merge.

- ❑ **Participant:** Anyone who takes active part in events and/or projects of this study
- ❑ **End-user:** A person who is served with the ideal outcome of this research; i.e. the museum visitor, gallery director who wishes to employ the formats presented with this study, audience

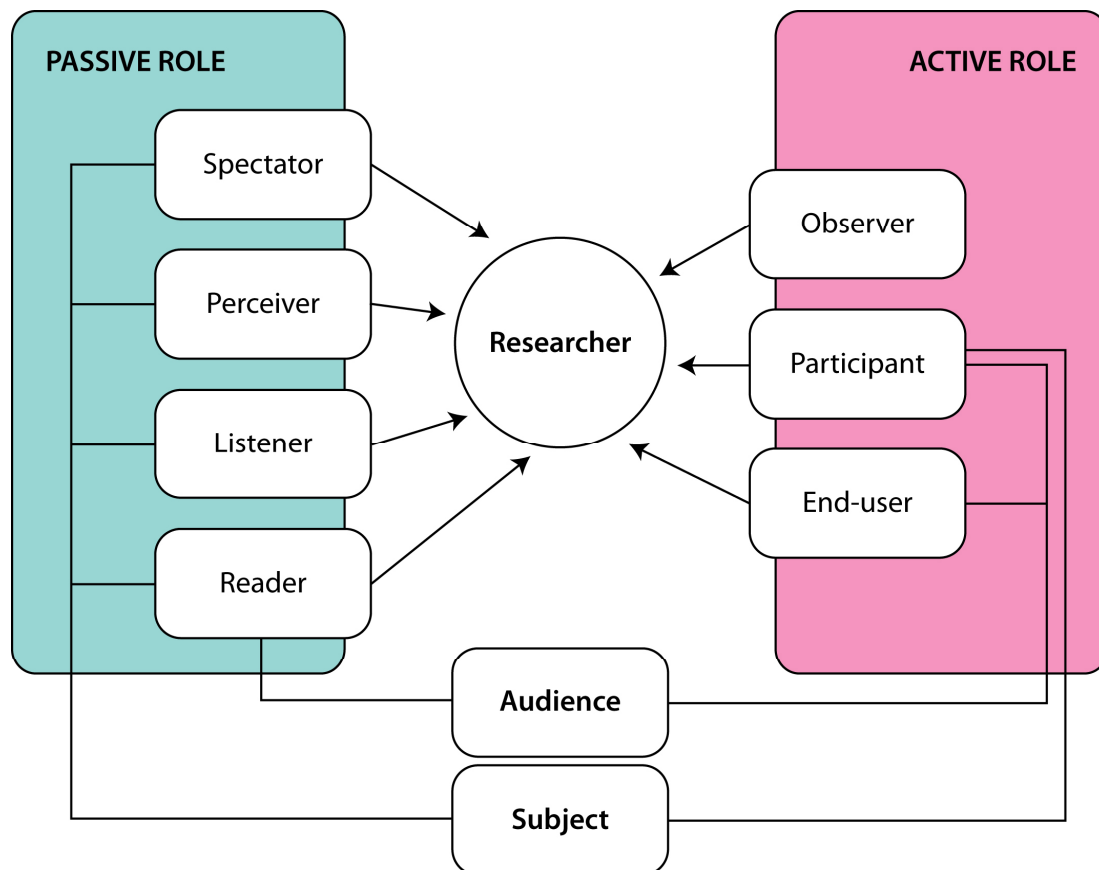


Figure 1-1: Graphic representation of the central theme and 'who views this research'

1.6 THESIS STRUCTURE

This thesis is formed of seven chapters. These are: the current chapter Introduction; Literature Review; Methodology & Methods which are then followed by the chapters relevant to practice. These practice chapters are: Tactual Explorations Project and a chapter called Other Projects and Experiments. The final two chapters are the Critical Discussion & Analysis, and the Conclusion. For illustrative purposes these chapters are defined as sitting within four broader research components of Introduction & Background, Research Approach, Practice, and Evaluation & Conclusion. The thesis

diagram below (Figure 1-2) illustrates the navigation of the thesis and the chapters in relation to these research components.

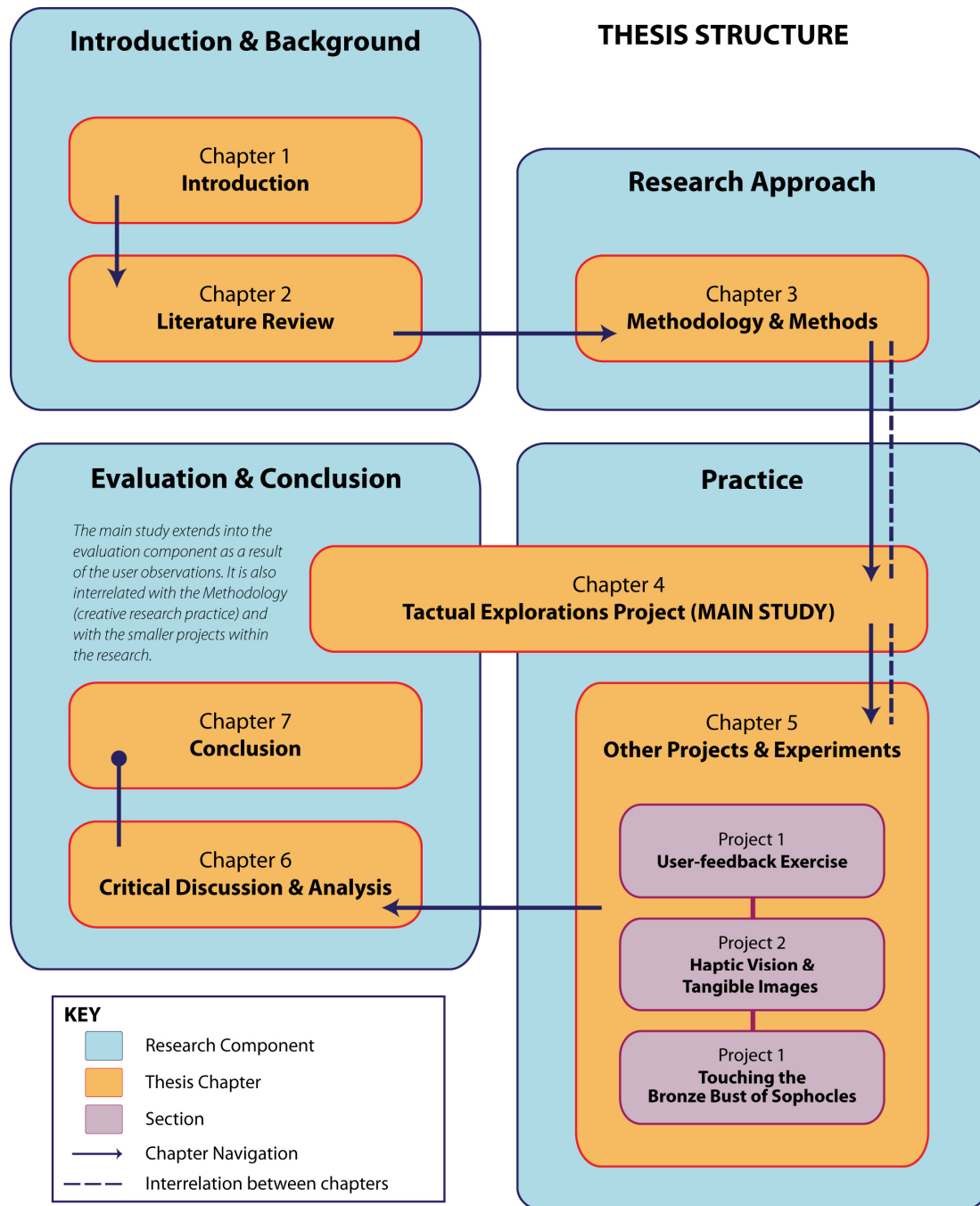


Figure 1-2: Thesis structure diagram showing the navigation and links to chapters within the research components

This current chapter, *Introduction*, has begun with elaborating what this research is about. This was followed with setting the research objectives and listing the research questions along with the main question of the study. The following section stated what original contributions this thesis offers to academia¹². The section that followed this originality declaration paid a particular attention to description of the audience of this research as well as the viewers of the thesis. The chapter is now being concluded with this structure which will summarise the other chapters:

After the above-mentioned practical look at what this thesis is about, the second chapter, *Literature Review* follows and builds on this introduction by reviewing the work influenced and inspired this research. The review locates the research within academia by examining the past/current knowledge within the sub topics. The style of the review is critical and contextual; therefore it contains the argumentation this research needs. This chapter first talks about the concept of touch and importance of tactile interaction in general, then brings the discussion to museums and gives brief history of museology before reviewing the access issues for visually impaired visitors as well as the subject of touch in museums.

As a minor but still an important topic, the literature review also touches on the subject of learning at museum institutions however; it places this inside a more relevant topic which is the visitor interactions in museums. This is then followed with the topic that is the heart of this research, inclusive approach studied under universal design principles. The chapter then moves on to a brief history of human-computer interaction and Haptics then concludes with the review of technologies as well as Augmented Reality (AR) used in museums.

Once the previous research is reviewed, the third chapter, *Methodology & Methods*, reflects the methodological considerations and strategies that this research employs. After an introduction and an argument for the choice of methodologies, the chapter dedicates a section to creative research methodology. Here, how a multi-method approach is applied to every element of practice within the research is illustrated and multiple roles of the researcher are further explained. By confirming the multidisciplinary and experimental approach, the study first pictures itself within a

¹² The contributions to knowledge will be discussed a greater deal in the Conclusion chapter.

performative research paradigm and describes how it was developed by some epistemological and ontological influences such as action research.

Also in the methodology chapter, along with Schön's notion of reflective practitioner as part of action research, curatorial and artistic methods that this study employs as part of the creative research methodology are defined; At this point, the links between action research and performative research are drawn, then writing as practice is proposed as one of the research methods that shaped this study. As well as data collection methods, the chapter also provides information on data analysis and evaluation methods.

Straight after the methodological approach, the practice elements of this research are introduced and explained further. The fourth chapter, *Tactual Explorations*, focuses on the main project of the research. This project was created first as a format proposed for a new type of exhibition, then as a fully realised public event which tested this format by providing a tactile exhibition along with public workshops, artist talks and discussions/tours for specialist schools.

Within the fourth chapter the aims and developments of *Tactual Explorations* project are clarified, and project management stages are explained. The impact and involvement of other artists besides myself who created work for this project is discussed, and our individual artworks as well as the workshops that were created for this project are discussed in relation to the artist brief which was prepared tactically for the project. This part of the thesis concludes with the direct results of the project and visitor feedback, before moving on to the next chapter illustrating the other practical elements of the research. On that fifth chapter entitled *Other Projects & Experiments*, each project is individually described and their outcomes are illustrated.

The first practice work inside this chapter is the *User-feedback Exercise* that took part in London with small group of randomly selected participants. The exercise was designed to gain a first-hand observation of people interacting through touch and to understand the basic role of touch in examining objects. The exercise was also designed to study the realisation of tactile information as an interface to a visual exhibit.

The next practice element introduced within this chapter is the *Touching the Bronze Bust of Sophocles*. Since the Bronze Bust of Sophocles is the selected object of this thesis, an in-depth analysis of the object and visitors' interaction with this object was studied

further. This work is not only presented for the purposes of adding real insights to the surface information presented on the Bronze Bust of Sophocles and its replica, but also as a means to analyse and define my research behaviour.

As the third project within this chapter, another practice element of the research, a curatorial study called *Haptic Vision & Tangible Images* is introduced. This project is based on the notion of gathering tactual definition from untouchable visual information, in this case a selection of photographs from a purposefully created online pool sharing the same title of the project. In order to study the texture properties that have the potential to be interpreted, the project uses the same questions raised or addressed by the Tactual Explorations. With the intention to test and/or validate results, the project invites other scholars to describe predetermined tactile properties against these questions. The images supplied within the text in this chapter are either screen-shots or photographs to illustrate certain parts of the individual projects and only represent a small selection. The main collection of images and relevant documents can be found in the appendices section. A DVD is also supplied with this thesis to show any video footage and photographs as an attachment.

Following the practice work, the sixth chapter, *Critical Discussion & Analysis*, communicates the ideas and issues raised by this practice, and it also delivers further discussion on argumentation that was presented within the survey of literature which takes place in the *Literature Review* chapter. At this point the research also gets placed within a theoretical framework of questioning the thingness of an object as well as valuing the interface as a tangible information tool between people and an untouchable museum object through strategies and philosophies of other scholars.

After six chapters of illustrating the research process and its connection to academia, the seventh chapter, *Conclusion*, looks back at the finished research. This chapter gives an overview to the thesis by summarizing the results and evaluates these results by stating what objectives are achieved with this inquiry with special references to the discussion and practice work. The conclusion then wraps up the thesis by contemplating future work and potential plans attached to the research.

A list showing re-definitions of some of the keywords and terms is placed in the Appendices section at the end of this thesis. It is not aimed to be a complete glossary; however it can be used as an aid when reading this thesis.

CHAPTER 2: Literature Review

Overview

This chapter, being framed around the discussion of the research topic and the research problem, reviews the existing work and projects relevant to this research. In general, the selective literature is collected from worldwide sources; however examples related to policy and legislation frameworks are mainly focused on the UK and the British museum industry in order to stay within consistent boundaries.

Since the literature review has been an ongoing survey to this study as part of the practice, it has naturally affected different parts of the thesis in divergent ways. Because of this reason, although the literature is presented in the form of a contextual review in this self-contained chapter, some references to current knowledge and ideas at times appear on other chapters according to their relevance. In addition to this, the sixth chapter, *Critical Discussion & Analysis*, further investigates some of the ideas and arguments seeded in this chapter.

2.1 SEEKING THE HUMAN ELEMENT

We are surrounded by many scenarios and various possibilities of interacting with information in our daily lives. As a child I was always fascinated by the special relationships we have with objects; and later on in life I discovered, like everyone else perhaps, that this fascination was a search for information; for knowledge. This knowledge is not always attached to the object in discussion but how that object could lead to further understanding about something bigger than itself; in other words, how an object could be an interface to a phenomenon. Touch is the most natural instinct in investigating this knowledge. If the object is forbidden for touch, the channels to get to that knowledge somehow remains limited. If that missing tactile information is not replaced adequately, the interaction cannot be complete. This replacement needs to be humanly, and should not be there for the wrong reasons. Bringing this issue to the museums topic, museums are currently under big pressure to develop new ways of engaging their visitors with their collections, and the rapidly developing haptic technologies have the potential to enhance visitor interaction. However the current solutions do not always consider the most fundamental human aspect such as aesthetics (Prytherch & Jefsioutine 2007). A museum display that is formed of the latest haptic technology can hardly be a long-lasting one unless it embeds this technology purposefully and transparently for a better user experience. If the novelty factor of a technology overtakes the human experience, that solution can only live as long as the newness of the technology. As Prytherch & Jefsioutine (2007) argue that the need for haptic technologies for these institutions are still unclear and further user-focused research is necessary to investigate the actual value of such technologies within museums. My research fills an area within this gap by re-introducing the human element and focusing on the physical and real, as well as challenging the understanding of inclusive approach, while using the sense of touch itself as means to practice within this research.

2.2 IMPORTANCE OF TOUCH

Since my research is focused on the 'continuous' human aspect of touch, from holding the hand of a person to touching the glass case together in the museum, I include this section about importance of touch early in the review. The main aim here is to look at touch as a concept as well as an important human sense, and to visit its changable place in the history.

“How is one to touch, without touching, the *sense* of touch?” asks Derrida (2000 [2005], p.135) then revisits the same question immediately and wonders whether sense of touch should touch us, even before we get to touch it. The discourse on the relationship between touch and the human condition takes its place deeply embedded in the modern and contemporary thinking. As a matter of fact, should the reader of this thesis touch their hand with their other hand (or one part of their body with another part) at this moment, they would arrive to a very similar question to Derrida’s, from a very similar angle. This is mainly because touch occurs in a dimension that involves at least two reciprocal elements, and the dynamics between these two elements rely on numerous variables. Each and every instant of touch on skin represents a unique fascinating story.

Touch is not a sense that operates on its own. Instead, it needs input and feedback from the texture of skin, the movement of hands, arms, legs and fingers, and the spatial information of how body parts are positioned in relation to the whole body and its environment (Candlin 2004). In one of the earliest studies of human anatomy in English language, Crooke (1631) describes the skin as an organ that knits the whole human body together, almost as a seamless garment. Because of this flawless continuity and not being attached to a single organ, Crooke considers touch as the most fundamental sense of all (Harvey 2002). Since the skin covers the entirety of the human body, act of touching or being touched leads to a corporeal experience. And this corporeal experience can be formed through various impulses such as signal of authority, medical attention, sexual desire and sociable affirmation, depending on factors such as culture, time and place.

The importance of corporal result of tactile exploration in humans is widely understood by experts in various fields, and it is even applied to alternative teaching and learning as a communication tool in schools and creative institutions. Tachibana dance studio in downtown Tokyo, also known as Hatchobori¹ uses touch as an active and direct method to teach dance moves and techniques to their students (Figure 2-1). Hatchobori dancers receive tactile transmission from their seniors directly as an active guidance for learning certain moves and complicated posture. In these sessions the teacher, through touch, reads the student’s body along with its form sensationally, and guides the

¹ The dancers of the Tachibana studio affectionately call this place Hatchobori because of the metro station located opposite of the street, and throughout the book the place is referred as Hatchobori.

student into the right posture simultaneously directing the student's motion (Hahn 2007). While defining touch as a complex sense, Hahn (2007) comments on the inclusion of touch in dance lessons continues as:

Though the eyes are the perceptual organ of visual data, there is no single organ for sensing tactile information. Instead, tactile sensing occurs throughout the body; the receptors are cutaneous and connect to a web of nerves and muscles throughout the body. Touch is fully integrated into the body -cutaneous and subcutaneously- so the entire body organ is an organ of touch (p.100).



Figure 2-1: Touch-based teaching at the Hatchobori²

Until E.H Weber, a physicist at Leipzig, published his work entitled "Tastsinn und Gemeingefühl (On the Sense of Touch and Common Sensibility)" in 1846, touch was not differentiated into diverse types (Weber 1834 [1996] / Kruger 1996). Not only did Weber invent the idea of differences between two separate but close physical stimuli, but also built the foundations of psychophysics which is the "quantitative branch of the study of perception" that investigates the direct and indirect relationship between physical tactual senses and the states of mind (Weber 1834 [1996] / Neely 2011).

² Photo © Walter Hahn: Tachibana Yoshie teaching through touch (Hahn 2007, p.104).

Touch gives us the ability to judge the shape, location and weight of objects by incorporating data gathered from the combination of proprioceptive muscle receptors and the sensory receptors located in our skin. By converting the forces of mechanical action into electric impulses in the nerves, these receptors perceive sensations. The term for these receptors is 'mechanoreceptors' and they enable us to judge an object's size, shape, weight and hardness, and to perceive vibrations and texture. Research provides us with four known types of mechanoreceptors. These are: Merkel's disks, Meissner's corpuscles, Pacinian corpuscles and Ruffini's corpuscles. Merkel's disks and Meissner's corpuscles are located on the top layers of the skin closer to surface and are generally seen in hairless areas of our body such as lips, tongue, palms, and fingertips. Meissner's corpuscles in character are quickly-adapting receptors while the Merkel's disks are slowly-adapting ones; therefore our skin gets the ability to perceive both sensations not only at the time of touching an object but also for the duration that object stays in contact with the skin. The information about size and shape of the object helps us define its type, whereas texture and weight information define its material qualities. Using our fingertips our brain receives a large amount of data about the texture of objects because the ridges that form our fingerprints are covered with these sensitive mechanoreceptors (Open University 2003 / Wing *et al.* 2007).

Skin also contains receptors called 'thermoreceptors' which enables us to judge sensations related to temperature of an object in relation to our body. There are only two types of thermoreceptors in our skin, and these are simply referred to as 'cold receptors' and 'hot receptors' and they enable us to differentiate between thermal conductivities (i.e metal feels cold due to high thermal conductivity, wood feels warm because of its low thermal conductivity). These thermoreceptors also provide protection against dangerous levels of thermal input to skin (Open University 2003 / Wing *et al.* 2007). In addition to this, there are receptors in our skin which are related to perceiving pain. The sensation of pain is vital for our survival instinct as it forms the most vital warning system against tissue damage. (Kruger 1996, p. 243)

As well as giving us spatial information, or evoking sensual and erotic thoughts and reflecting pain, touch has also been a way of representing and communicating more contrary concepts such as religious approval, scientific knowledge, medical comfort and artistic creativity (Harvey 2002). For instance, in *Memoirs of the Blind*, Derrida (1993) draws the reader's attention to how Jesus restores the sight of blind men by touching their eyes, as appears in the gospels according to Matt, Luke and Mark. Healing by touch also occurs in literature and poetry. For instance, Iyengar (2002) investigates the

sexual healing of touch in Italian poet Ludovico Ariosto's epic story *Orlando Furioso* and its influence on Edmund Spenser's and William Shakespeare's works. In this story pagan princess Angelica possesses a gift of healing touch and she treats Medoro's wounds of love by nursing him through touch. As seen on the Figure 2-2, artists illustrate these moments with gentle bodily gestures and signs of tenderness.

On a slightly different note, though still within the investigation of relationship between human touch and symbolic religious acts, Schaffer (1998) takes his reader back to the time of the Restoration in England, through examples from the Royal Society's experiments involving philosophers' bodies. Here, Schaffer refers to the ceremony of the "royal touch" which states the monarch as the healer of the nation and the restorer of health to cure "King's evil" (p.85). In these ceremonies, the monarch touches the sufferers previously identified by the religious authorities, and performs the royal miracle. The touch here is associated by holiness and restoration. Contemporary researchers take the concept of healing by touch and seek ways to use touch as an integral part of therapeutic approaches to human psychology. In 2006, researchers Noble and Chatterjee started a project investigating the role of touch in therapy through handling sessions, and tested the idea by bringing loan boxes from museums to patients at their beds in the University College hospital in London. To realise this quantitative study, they first trained a number of second-year medical students in areas such as object handling, communication skills, data collection and health and infection control, and then asked these students to take these museum objects to the patients. Students asked questions including "What does the object feel like" and "can you think of any experience that might be related to this object" (Noble & Chatterjee 2008, p. 220). With these questions, they were testing whether or not museum collections could take an active part in the well-being of a patient. They concluded the study by identifying the potential strength of this approach not only in the healing of the patients, but also in the development of staff-student relationships in the hospital as well as staff training. Following this pilot study, Chatterjee still continues her work on touch and value of object handling for therapy in hospitals.

As these examples clearly illustrate, regardless of whether or not some of the ideas such as spiritual healing through touch are currently accepted as proven methods, the act of touching among humans tends to be linked directly with positive intentions since the early times when human interactions were starting to be documented. In contrary, however, touch can also represent a negative act such as the touch of demon as an expression for "demonic attack" in Mesopotamian magic, as seen in the examples of

Sumerian-Akkadian incantations³ (Geller 2007). It is a common knowledge that every culture involves touch in human relationships in a different way, and types of tactile stimulations can be as open or close as that culture permits. In looking at “Taboos Against Touch” in her extensive study of tactile senses, Field (2001) also looks at the differentiation of good and bad touch and gives the example that children in the western society experience, and reminds her reader of the strong implementation of child-abuse prevention programs in schools in the United States in 1990’s. In these programs, as well as children, teachers were also trained to set apart negative touch from the positive contact. In this study, Field also argues a fact that the Americans tend to grow up with very little tactile interaction. She then describes this lack of tactile interaction as “touch hunger” (Field 2001).



Figure 2-2: Images of Angelica's (left) and Christ's (right) healing by touch⁴

From a similar yet more positive perspective, Montagu (1986) connects the cultural behaviour with signs of norms between people. He argues that mouth-to-mouth feeding of babies among indigenous tribes could easily be a clear sign to how touching with the lips later on become a positive symbol of affection between humans. Based on maternal instinct, Winnicott (1952 [1958]) identifies the concept of the care given by a mother to her infant as an early phase and coins a term for this phase as “holding” (p.226). He argues that the phase of holding is a vital ingredient in a child’s development. Montagu

³ An example Geller gives from these incantations: May you, evil Utukku-demon (and) ghost who have touched the man, (and) you, Fate-demon, who touched the man’s head...

⁴ Left: Angelica and Medoro by Simone Peterzano, oil on canvas (© www.masterart.com) & Right: Christ Healing the Blind by Nicolas Poussin, Oil on canvas. Louvre (© www.abcgallery.com).

(1986) and Field (2001) associate child-mother actions such as feeding and holding (in its broader meaning) with positive feelings and therefore linked to pleasant memories in the adulthood. Buytendijk (1970) argues that this tactile relationship during the infant months has a fundamental role in the shaping of a foundation of one's existence by providing a sense of "being together" and a sense of "being one-self" (p.102).

Enduring within the subject of human psychology, it might be appropriate to look at touch that can be associated with acts that are rather controlling; or the act of touch that can be attached to explicit or inexplicit domains of the subconscious. As Buytendijk (1970) found out, there is a distinct difference between the act of touching and being touched. He argues that "being touched is, as the most simple experience teaches us, to be distinguished from , oneself touching something" (p. 100). In this case, this act of being touched is looked at from the point of view of the person being touched, rather than the person who does the touching; therefore the act itself is classified as receptive.

A relevant example to 'being touched by the other' in a receptive context (rather than purely philosophical one⁵) can be drawn from an essay by the British child psychotherapist Adam Phillips, where he analyses humans' experience of being tickled. In this work, Phillips (1993) affirms that being tickled is a pleasure that cannot be reproduced "in the absent of the other". The reaction to tickling tends to be rather involuntary and the first response to it usually would be to laugh. What occurs here is also partly what Buytendijk (1970) calls an "emotion-shock", which is due to the act of being touched to contain a "moment of surprise" (p.113). Phillips (1993) associates being tickled with a "primitive kind of pleasure" combined with sense of helplessness (p.2). When revealing the feelings gathered from the tickling exercises, Murray (1908) refers to phrases like "peculiar type of consciousness" in terms of function and cognition; and in structural terms he calls the sensation as "ill-localized / ill-analyzed" because of the act's consistency and the persistence attached to it. He concludes the overall experience as "neither as pleasant nor as unpleasant, but as exciting" (p.343).

In most touch-related research studies, there seems to be a tendency to put senses into hierarchy of importance or vitality. While the more traditional and general view tends

⁵ For example, Husserlian approach to touch would be from the point of view of the "touched hand" which then becomes the subject in being touched, whereas for Merleau-Ponty being-touched interrupts the subjectivity of the hand (Al-Saji 2010)

to favour sight over touch, more contemporary researchers successfully conclude their research with the findings of touch being as important and vital. In a recent study on the involvement of haptic senses in developing tacit creative skills, Prytherch and Jerrard (2003) observed that the haptic senses were at least as significant as vision to their subject. Vision, they revealed, functions mainly as means of monitoring progress; and importance of the haptic senses are not usually acknowledged or widely recognised even though they are essential to creative processes.

The argument for measuring the importance of touch goes back a long time. In a study on desire and disgust, Hall (2006) draws attention to the views of artists and thinkers such as Petrarch, Leonardo and Galileo Galilei, to support the fact that touch was considered as the most animal-like and shameful sense until the eighteenth century, whereas sight was considered to be the most respectable. According to Hall's research, there was a constant battle between sight and touch, which was formed from the similar clash between painting and sculpture during Renaissance⁶. We can see in Hall's research that some of these comments towards touch and sculpture were quite harsh compared to how sight and paintings were glorified. Admirers of painting believed that the only reason to touch a sculpture would be to "discredit it as an artform", and Leonardo da Vinci believed the eye to be "the window of the soul" and "touch was only able to furnish information by direct contact with an object" (Hall 2006, p. 146). Hall's research is quite extensive and throughout the study he continues to illustrate this historic hatred and skepticism towards touch that prevailed amongst scholars and artists of the era.

Even though some of these conservative approaches had their roots in the intellectual debate over 'what is real' and 'what art is', in the end all of these opinions were concerned with appropriateness of touch in general.

Stewart (1999) touches on Aristotle's hierarchy of senses and points out Aristotle's argument for similarity of touch and taste. Noting that senses, at times, are interconnected and can become one another, Stewart reads from 'De Anima' to illustrate how Aristotle refers to taste and sight as forms of touch: "Hence it is that taste also must be a sort of touch, because it is the sense for what is tangible and nutritious"

⁶ Here Hall (2006) informs us that these debates – known as the *paragone*, which means comparison, were quite fashionable at the time.

(_____ 1992 / Aristotle c1941, p. 601). And because both senses are found in all animals, Aristotle considers these two as the lowest in the hierarchy. Stewart adds that according to Aristotle the need for touch stands for “being”, not for “well-being” which is a condition created by the other senses, therefore putting sight at the most valuable ranking and touch at the least, even lower than taste. The conditions creating the grounds for this hierarchy are arguable considering the doubtful research of variables. Derrida (2000 [2005]) proposes that Aristotle’s approach to touch in general might not be a complete one as during his research of Aristotle’s works, Derrida could not locate any references to ‘blow’ or ‘caress’ which Derrida considers both to be vital to measuring results. However, whether complete or incomplete, Aristotle’s conclusion which classifies touch as the lowest sense in terms of ranking and/or class, leads most contemporary researchers and thinkers including Derrida to interpret this as a clear sign that touch is a fundamental sense.

As Derrida (2000 [2005]) argues “no living being in the world can survive for an instant without touching, which is to say without being touched” (p.140). He argues that at all times, even when the existence of nothing touches us we touch or get touched by something or someone. Here, touch is bravely associated with everything and everyone in the world as an inevitable aspect of being. Because we exist, touch touches us.

Every day, we refer to sense of touch as a first source gathering various types of vital information about our surroundings. Even a textbook aiming purely to teach the science behind our tactile senses, with no intention of being engaged in philosophical argument of hows and whys of touch, can stress a confident statement like:

We don’t wait for stimuli to bump into us; we actively seek to touch objects. Why else would museums and exhibitions have to put up notices saying ‘Do not touch’ if it were not for the fact that this is such a basic way of exploring new objects...The ways of judging the quality of an item depend more often on touch than on sight. ” (Open University 2003 , p.19)

For some people, touch is the only way to communicate with the world, and for some it takes the place of vision; even can become vision. Deafblind children develop their skills without the aid of sight and hearing, and touch occupies a very large place in their life. In the case of most people with visual impairments, awareness and sensations of touch is heightened in comparison to sighted people. Traditionally, neuroscientists and psychologists have believed that each primary sense modality worked independently. They thought the visual processing cortex received only visual input, and audio processing cortex received auditory input etc. However later on through research this was proved wrong. Researchers found out that if a person did not have

sight since birth, parts of their primary visual cortex were taken over for tactile processes (Pring & Eardley 2003).

As Ballesteros & Heller (2006) argue, vision and touch are quite similar in how they interact with shapes and object in relation to space, and they have some important differences. They are very optimistic in relation to the future as the touch research is thriving rapidly, and although the study into relationship between the psychology of touch and cognitive neuroscience is still in its young stages, it is already producing important results. Further research directly combining psychology of touch and cognitive neuroscience has the potential to bring more insights to tactile interactions and make life more accessible.

Accessibility is so much more than using larger fonts, or including bumps on pavements. It is a concept that needs to be implemented in every design solution to make it relevant and appealing for its users. Implementation of this thought leads to inclusive design. Inclusive design, as demonstrated with the Tactual Explorations project, is the heart of this thesis. The next section will focus on this notion and introduce it with links to Universal Design which inclusive design originated from.

2.3 INCLUSIVE APPROACH / UNIVERSAL DESIGN

With an overall aim of removing barriers to “participation in social life” through application of Universal Design principals to legislation at the beginning of mainstream project planning, the Council of Europe Action Plan defines Universal Design as:

Universal Design is a strategy for making environments, products, communication, information technology and services accessible to and usable by everyone –particularly people with disabilities - to the greatest extent possible (Ginnerup 2009).

The term Universal Design was coined in 1985 by Ronald Mace, an architect who questioned the conventional methods of designing for the typical audience, and provided a new design concept for accessible and usable environments and products. His research took place at the Center for Universal Design (CUD) at North Carolina State University (Burgstahler 2011). Mace argues that architects and designers should design products and environments that adapt to the audience that they are aimed at, instead of expecting that users would adapt to their design eventually. Mace also argues that, if applied to a design project in the early stages through good planning, application of universal and adaptable features do not work a great deal more expensive than the traditional features (Mace *et al.* 1991).

The concept of Inclusive Design is very similar to Universal Design. So much so that, some scholars use the two terms interchangeably. However there are some principle differences. At this point, it must be noted that this research accepts Inclusive Design to be part of Universal Design paradigm or to have branched out from it as a natural process, therefore does not reject literature from Universal Design; in fact values it vastly. Also, the intention here is not to compare or choose, but to learn and improve. Therefore, for the accuracy of the literature survey, it is important to clarify the concepts further. Perhaps it would be more useful to start with explaining the similarities between Universal Design and Inclusive design definitions. As Waller and Clarkson (2009) contemplated, both of the definitions accept that it is not always possible nor appropriate to design something accessible for everyone. Furthermore they both focus on widening the accessibility and usability for mainstream products and environments, while aiming for products that are also functional and attractive in harmony. However, according to RNIB (2011) the term 'Inclusive Design' includes the concept of "reasonable" in its definition. This definition is:

"The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible on a global basis, in a wide variety of situations and to the greatest extent possible without the need for special adaptation or specialised design" (RNIB 2011).

Inclusive Design concept was born in the UK as a result of social, political and economic changes that occurred during the 1980s, almost around the same time as Universal Design was flourishing in the United States. Inclusive Design focuses on designing accessible products for all, for efficiency avoids the need for streaming several versions of the same product. This approach brings many social and economic benefits by improving the life of the elderly and disabled people therefore achieving inclusivity in design. As a result, not only does it avoid waste (therefore sustainable) but also promotes profit through increased number of consumers. (Goonetilleke 2003). Although this is a perfectly reasonable explanation, (Waller & Clarkson 2009) stress the corporate-appeal further and argue that Inclusive Design attaches particular attention to achieving success for business, and illustrates this as a dilemma to the inclusive intentions of the initial concept. However if we look at how Design Council analyses the need for Inclusive Design, we can understand how a "political project of social inclusion becomes a design issue" and the starting point of the problem that opened doors to Inclusive Design no longer takes place in its definition. Design Council (Coleman 2001) states that:

If people are excluded from the mainstream because of age, capability, location or income, then their lives become problematised, they become a

burden, a drain on resources, and a source of social division and conflict. Not because of who or what they are, but by virtue of being excluded...

...We need to recognise that people are excluded by design when they could be included by it. The emphasis here is shifted away from age and capability and on to design and its social consequences. From this perspective it becomes possible to flesh out the concept of inclusive design as a process whereby designers address the needs of the widest possible audience by including the needs of groups who are currently excluded from or marginalised by mainstream design practices, due to age or disability or rapidly changing technologies and work patterns (p.23).

As seen above, although Design Council (Coleman), clearly but briefly identifies Inclusive Design as an answer to an economical policy of the government, they very quickly turn the debate around and accept this as a social and creative challenge.

Despite the similarities between Inclusive Design and Universal Design, and the widespread understanding of both of them being the same concept apart from starting their lives in two different countries, this research prefers to refer to the concept as 'Inclusive Design'. This is for aiming consistency, and also because of the phrase being more user-friendly.

Inclusivity in design is vital to this research and its practice. Tactile interpretation in museums has the potential to revolutionize the museum experience and increase access to the object for everyone, including physically impaired visitors. If designers commissioned for museum projects do not apply inclusive principles, a very big objective becomes redundant. One of the first problems that we encounter in common 'inclusive' solutions in the design sector is that, very often they tend to exclude part of their audience in order to include another part. A solution that creates further problems is still considered to be a solution, however not an ideal one.

"In museums today, when we turn quickly from the untouchable art[work] to the written account or explanation placed beside it, we pursue a connection no longer available to us – the opportunity to press against the work of art or valued object." (Stewart 1999: p.30)

Inclusive disability regulations cannot accept separating visually impaired visitors from others. For instance creating touch-only museum interpretations would only address a small number of visitors, so this would be against the idea of inclusive design (Pearson 2003: p.41). Some museum professionals such as Pierre Rosenberg, the former President and Director Emeritus of the Louvre Museum criticizes today's "politically correct" opinion of public priority over art, by raising questions like "are museums really for everyone", "how much should museums cater to the broad populace" and "should one

exhibit everything” (NAFAE 2004). Even though questions and statements like these arguably suggest negativity, I truly believe that they provide a helping hand in developing and reforming the current inclusive approaches in public settings, by enhancing the debate’s boundaries.

Without a single use of the word ‘inclusive’ in “Counterfeit Museology” article, knowingly or unknowingly Ames (2006) actually questions museums’ approach to inclusive object interpretation and presentation. Suggesting that the communities should be allowed to represent themselves in museums, Ames (2006) argues that:

Assisting communities to develop their own cultural interests requires a different skill set. Even with their natural good will, museum initiatives may prove to be counterproductive, creating a condition of “museological iatrogenesis”—unwanted side effects of good intentions⁷.

As well as questioning the role of designer and giving references to conventional definitions and excluded groups of people, inclusion can be looked at from another angle which involves artistic collaboration and contribution aspects in creating design solutions in the first place. For example involving a number of artists and scholars in creating a museum interface for a museum object (just like this thesis proposes and defends), may bring another viewpoint to the art historian’s interpretation. Therefore the interpretation not only becomes more inclusive for the audience by containing extra data, but the artists’ individual works become inclusive by becoming part of a dialogue. This then brings the ‘external’ into discussion in applying inclusivity and accessibility to research projects.

Another issue when aiming to achieve inclusive museum interpretation is aesthetics. There is a tendency among designers to compromise and vote in favour of function against aesthetics, with the excuse to increase access. However this approach comes from the misunderstanding of the term. Even though the common use of aesthetics in our culture deals with beauty and taste as visual concepts, the actual meaning of the Greek word *aisthetika* is ‘that which is perceptible through the senses’. This actual definition of aesthetics is in fact suggests inclusivity, as it accepts sensations aroused from all senses, including sight and touch as decisive factors that humans use to appreciate an objects sensory value (Macdonald 2002).

⁷ Ames cites the following here: Illich, I. (1975). *Medical nemesis: The expropriation of health*. London: Calder & Boyars. p: 26-27 & Cayley, D. (1992). *Ivan Illich in conversation*. Concord, Ontario: House of Anansi Press. p: 105-108.

Form without function and function without form could not lead to a successful representation of information. It is the designer's challenge to find a well balanced ground. In museum settings when the visitor is not allowed to touch the original, the challenge gets even bigger. Therefore at this point in the review it will be useful to first have a look at the history and reasons behind the 'do not touch' policy at museums, before looking at solutions that have been provided in the recent years.

2.4 'DO NOT TOUCH' POLICY

Examining museum objects through touch, one of the most basic instincts that humans have, is not always possible especially when the object is precious and fragile. Museums do not grant automatic access to their collections, even if they are public institutions. Having said that, 'hands off!' was not the most usual policy in the earlier museums; in fact the majority of the museum curators allowed their visitors to handle the museum collection as a social act of "hospitality" (Classen 2005). At times, the curator was the host, and the visitors were her guests that wanted to purely examine the objects.

The transition from handling objects freely, to no-touching policy in late 1700s and early 1800s has not necessarily happened as a fast-track conservation rule; in fact it occurred very slowly as a result of practical reasons depending on individual museums' resources, purposes, and collection origins. Some museums only displayed objects from private collections, whereas others had their own objects to display to the public (Noordegraaf 2004). In some cases, curators received their salary only from the visitor admission fees. Therefore curators encouraged visitors to physically examine the exhibits, in order to make the museum more attractive. Other practical reasons such as glass displays being very expensive to use for protection, and the available physical space within the museums being very limited also made the exhibits available to public touch by default (Classen 2005).

It is now a common knowledge that human touch is one of the major factors that can cause damage to museum objects. Although museums want their visitors to explore their collections fully, and encourage them to make the most of their visit, the conservation rules understandably forbid handling the objects. The V&A lists several reasons for how humans' presence can cause a threat to the precious objects from their collections. One of these reasons, they argue, is "upsetting the delicate balance necessary for the preservation of the objects" (V&A 2007). And for the physical harm that human handling can cause, they state:

“[A]lthough it is a natural response to want to touch things, the museum usually has to discourage this as the cumulative effects of abrasion, grease and sweat can result in irreparable damage.”(V&A 2007)

In addition to damage that human touch can cause to the object, museums also need to protect all of their objects from theft, especially the smaller pieces such as coins and jewelry as they can be very difficult to control if left open to public (Lazzari *et al.* 2002). In some cases museums ought to protect their visitors from handling chemical or toxic elements that can be found on objects from certain periods and/or ones that do not contain enough information about their material in the first place. Handling such objects has the potential to be dangerous to a non-trained person. In such cases, should the ‘do not touch’ policy even be open to discussion? What makes one privileged enough to touch the otherwise untouchable? Is there more to touching in museums than meets the eye?

It must be said, there exists a rather dominating and patronizing sense of authority that tends to emanate from these highly established institutions towards us. It is almost as if the museum is a proud container of knowledge, and sharing this knowledge with its public is an approval. The cold admission rules of the museums then brings this sentiment even closer to life. Even the commonly available ‘touch tours’ start to appear almost as controlling and inefficient practices. And the mind suddenly moves back to when museums stopped giving tactile access to exhibits, and questions whether there could be other reasons behind this decision; other than the practical ones described earlier in this section. Some researchers question even the level of permission to touch in relation to class that was available back then. Although this research is not about a political argument attached to museums’ history, because of the subject’s relevance to museum’s function and its potential power to change future approach to object handling, it is necessary to look at this side of the debate⁸ briefly.

Candlin (2008) acknowledges and respects other researchers’ suggestions as to the chain of events that might have taken place on the way to the ‘do not touch’ policy. However she subsequently reveals her thoughts and findings about how class was a dominating factor in getting access to museum objects. The upper class, she argues, had always right to touch, and their touch was accepted as “rational and non-damaging” whereas on

⁸ Issues related to colonial impact on museums’ history, or opinions related to who owns the collection are deliberately left out of this review. This is mainly to stay within the boundaries of the research and focus on the topics that contain more direct relevance.

occasions when the lower class would get to touch a museum object, this touch would be seen as “unruly and dirty” (p.9). Candlin looks back at the practice, and observes that during the nineteenth century, access to collections for working classes was increased. Although this access was not same as what the elite class easily got until then, this new practice of accepting visitors from all classes made the museums more public places. However, this change automatically brought a decreased access ‘for all’ in terms of physical contact with the exhibits, and as a result, as Candlin argues, “improved public access to museums” came with its costs, one of which is the “loss of touch as a valid means of engaging with the collections” (p.15).

Moving on from an open-ended argument, I would like to bring the subject back to an area which is vital to this research: the function of museums accepted as within this research’s boundaries to explore how visitors interact with museum objects and what role museums have in the process of learning.

2.5 LEARNING AT MUSEUMS, AND ACCESS FOR VISUALLY IMPAIRED VISITORS

Museums can provide less formal and more flexible learning environments than the typical classrooms, where children feel more comfortable therefore more motivated (Xu *et al.* 2005). Curiosity & Imagination, the national network for children’s hands-on learning, offers children practical, exciting, and powerful hands-on activities to develop their identity and inspire their imagination. Funded by the Esmée Fairbairn Foundation and the Carnegie United Kingdom Trust, their ‘Bringing Heritage to Life’ program provides hands-on museum and heritage experiences to children in order to support their learning. As part of their ‘Action research’ scheme, the Curiosity & Imagination (2007) undertook in total 9 hands-on heritage learning projects under the main research titles of ‘By Children, For Children’ and ‘Making a Difference’ between January 2003 and August 2004.

The Museums, Libraries and Archives Council (MLA) was launched in 2000 as the strategic agency for museums, archives and libraries, replacing the Museums and Galleries Commission (MGC) and the Library and Information Commission (LIC). Their policy for the museum sector asks curators and program makers to provide more educational and inclusive content. By providing an “Access for All” self-assessment toolkit to museums they also make the accessibility and diversion policies accessible to these institutions (MLA 2007).

Similarly, the Cultural Heritage Applications unit of the European Commission has launched a study called 'Digital Heritage and Cultural Content' (DigiCULT) at the end of 2001. With an overall aim of making digital resources for the cultural heritage sector more accessible to a wider audience with the use of ICT (Information and Communication Technologies), the DigiCULT study provides European museums, archives, and libraries with guidance about the challenges they would face between 2002 and 2006 (Mulrenin 2005). One of the important outcomes of this study is the process of “unlocking the Value of Cultural Heritage”. To illustrate this, “A Four-Layer Model” was produced (Figure 2-3).

The function of the museum has long been discussed, and completely different views aroused from these discussions. In the most basic form of description, museums are institutions that preserve “precious things and ideas” (Welsh 2005: p. 111). Even though the role of museums in society is constantly changing, museums are still collecting and conserving valuable objects from different periods of history. With the 1995 Disability Discrimination Act (DDA)⁹ coming into legislation, to provide not only physical but also intellectual access to content in museums became a legal requirement in the UK. Museums now all around the world are developing new ways to enhance their educational facilities, improve access and appeal to wider audiences. The British Museum, for example, has a wide range of events organised for deaf and blind visitors, signed gallery talks, handling sessions, and Braille labels and plaster cast reliefs of Parthenon sculptures which can be touched (British Museum 2004).

As stated in the previous section, most blind people rely on touch to gather graphical and spatial information of objects (Heller 2003: p.161). Until the late 90s, there was not a large number of written works available about accessibility in museums (Rayner 1998). Today on the other hand, there are plenty of resources for researchers like myself to study and understand what kind of developments accessibility in museums has been through. For instance Rayner’s research for ‘Access in Mind’ looks at some early learning-related activities made for or with disabled audience in mind (1998). Access in Mind is a published report in the format of a book put together for the Intellectual Access Trust (INTACT) in Scotland, with the intention of producing guidance to museums and museum researchers to broaden their understanding of inclusive heritage

⁹ Government defines Disability Discrimination act as “a piece of legislation that promotes civil rights for disabled people and protects disabled people from discrimination”. More information can be found at: http://www.direct.gov.uk/en/DisabledPeople/RightsAndObligations/DisabilityRights/DG_4001068

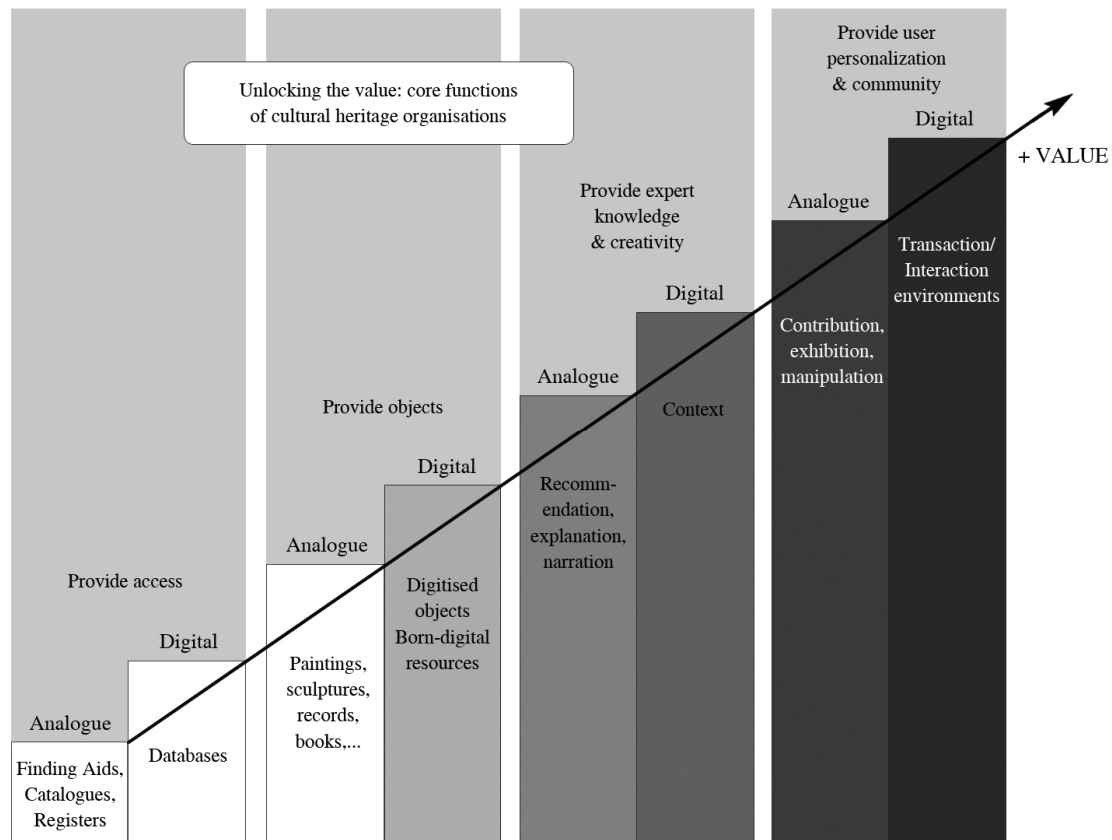


Figure 2-3: Unlocking the value of cultural heritage resources; DigiCULT four-layer model (DigiCULT 2005)

and cultural institutions. This report was the result of interviews and observations which took place largely in Scottish museums. The report examines the improvements in accessibility that took place in museums after the 1995 DDA for physical needs and raises the argument for a need to pay more attention to intellectual access, to also include visitors with learning disabilities. I took this criticism into account at the time of designing the Tactual Explorations project of this thesis, in order to make it available to everyone who wished to take part.

People with sensory disabilities are offered less advanced amenities than people with mobility disabilities in museums, although the multisensory approaches have become common “services” in some of these institutions (Kusayama 2005). Visually impaired museum goers demand better and wider access to museum collections and now the government legislation recognizes this need officially (Candlin 2004), it is even more

necessary than ever for researchers to work towards better, inclusive, and more meaningful access to the museum exhibits for such visitors.

In addition to general access debate within the museums, the concept of 'tactile museum' is also becoming more widely available not only as part of a conventional museum but also as an establishment on its own.

Although these museums are conceptually and practically are very different to what this thesis proposes, for the sake of understanding the development of access and Universal Design principle¹⁰ in museums, it is necessary to look at these important establishments. For example, founded in 1984 by the Lighthouse for the Blind of Greece, Tactual Museum¹¹ in Kallithea enables their visitors to examine replicas of ancient Greek works, such as Venus de Milo, one of the most important examples of Hellenistic art, the original of which is still held in Paris' Louvre museum (Becatoros 2004). Similarly, another tactile museum that is designed specifically for a blind or visually impaired audience is the Museo Tiflológico in Madrid, Spain. In its collection there are reproductions of art-historical monuments, art created by artists with visual impairments, as well as a historical navigation of the development of devices for blind people (Axel & Levent 2003). One other very important institution of tactile interaction is the Perkins Museum in Boston, America. The Perkins Museum illustrates the history of educating blind or deafblind students of variety disciplines, including Reading & Writing, Geography, Math, Science, Music, and Sports. The museum displays the school's history through original correspondence, photographs, and tactile images, as well as the oldest and largest tactile globe in the US (Perkins Museum 2011).

Main museums, on the other hand, usually offer 'touch tours', 'tactile images', 'tactile diagrams', 'Braille prints' and 'handling sessions' as part of their program (Axel & Levent 2003). Birmingham Museum of Art in Alabama in US, The Finnish National Gallery in Helsinki in Finland, The Jewish Museum in New York City in US, Museum of Fine Arts in Boston in US, and the National Gallery in London in UK are some of the museums that include touch tours, tactile replicas, as well as audio descriptions to enable better access for their visitors.

¹⁰ Explained in the Inclusive Approach / Universal Design section of this chapter

¹¹ Tactual Museum remained closed for 3 years until 2001, due to the damages caused by the 1999 earthquake. Website can be accessed at <http://www.tactualmuseum.gr>.

2.6 OBJECT INTERPRETATION AND IMPORTANCE OF THE OBJECT

More and more museums every day introduce new methods of object interpretation. The bravest ones take place at smaller institutions where the curators don't have to worry about the pressure of responsibility towards the conventional expectations of the public (Serota 1996). For most curators, objects are the most important aspects that make the museum so special; and without these artifacts, the museums would have no meaning. But how these objects are presented to the public, is a complicated science that involves skills from a wide range of disciplines.

Turning a "natural object into a humanly defined piece" is one way to define object interpretation (Pearce 1994). "A strong interpretation" however has the potential to transform the meaning of the artwork completely by bringing out something that was not there in the first place (Carrier 2006). If the object interpretation says more about the curator than what the object should represent or be part of, the information could become very open-ended for the audience. I would like to give an example to this from one of my exhibition visits during this research. This does reflect my personal opinion only, therefore a reference is not provided. In 2009, Mark Wallinger, a socially aware intellectual artist, took over the Hayward Gallery of Southbank Centre in London and curated The Russian Linesman exhibition successfully and, from the aesthetics point of view at first, beautifully. This beauty, however, was mainly due to magnificence of the pieces selected, similarly to the Willinger's own work that tend to contain this element of splendor and surprise. Some of the objects, especially those in larger-scale, magnified the basic political theme of the exhibition and somehow turned into messages. As a powerful artist, and a first-time curator with vision attached to his own style, Willinger's creative sense controlled the story. Although a sense of an exhibition of objects in harmony was present, the interpretation involved going through the artist's collage of concepts involving personal reflection on life. As a result, some of the historic-exhibition pieces were overshadowed by the artist's identity.

In addition to curator's powerful identity, sometimes, factors like lack of understanding of the context, not acknowledging the foundations of a culture or being selective and underestimating the audience could result in misrepresentation; therefore an incomplete interpretation. An example to this can come from a recent exhibition, 'Tipi: Heritage of the Great Plains' that took place at the Brooklyn Museum. The exhibition focused on "the tipi as the center of Plains culture and social, religious, and creative

traditions from the early nineteenth century to the present¹²” and its production involved collaboration between the museum staff and a team of native and non-native scholars, artists and curators. However the exhibition received a ruthless review¹³ from Ken Johnson of New York Times. The story was also selectively presented by Barbara Eldredge, currently a Design Criticism MFA candidate, on her blog Museummonger (Eldredge 2011). Johnson starts his review with: “You know there’s trouble when the first object you encounter in a museum exhibition looks as if it had been misplaced from the gift shop”, which is the last comment any museum curator would want to see on a newspaper about their exhibition. Later on in the text he continues with his review saying:

Beyond some basic historical context, the exhibition offers no revelatory perspective on its contents. That might be partly because, as the organizers, Nancy B. Rosoff and Susan Kennedy Zeller (both Brooklyn Museum curators) point out in their catalog preface, part of the planning process involved focus groups and visitor surveys “to determine the level of visitor interest in and knowledge of the tepee and Plains culture.” They also invited a team of American Indian scholars, artists and tribal members to vet their plans. The result is an exhibition that speaks down to its audience, assuming a low level of sophistication, and that does as little as possible to offend or stir controversy (Johnson 2011).

From here, Eldredge turns our attention to the curator’s response to Johnson’s review, which simply defends the methodology applied; Eldredge then follows this by Wall Street Journal museum critic Lee Rosenbaum’s take at this exhibition in her article about the current exhibitions on American Indian culture:

Because tribal authorities consulted by Brooklyn Museum curators Nancy Rosoff and Susan Kennedy Zeller strongly objected to public exposure of artifacts imbued with a warrior’s power, you won’t find any historic shields displayed in that museum’s deeply informative, child-friendly temporary exhibition, “Tipi: Heritage of the Great Plains”. By contrast, one of the stars in the permanent collection at the Nelson-Atkins Museum of Art in Kansas City, Mo. (reviewed here last year), is a rawhide Arikara shield from North Dakota (c. 1850) bearing the image of a buffalo bull. Brooklyn had to settle for a contemporary “shield”—a brightly colored glass circle by Marcus Amerman, Choctaw, decorated with images inspired by Lakota warrior Rain-in-the-Face’s magisterial buffalo-hide shield, shown in the large photomural on the opposite wall (Rosenbaum 2011).

This example sums up how things can go wrong despite good intentions. In history, on the other hand, there is truth, and there are versions of truth. Shettel (1997) points out

12 The exhibition’s website: <http://www.brooklynmuseum.org/exhibitions/tipi/>

13 The full review can be read here: <http://www.nytimes.com/2011/03/15/arts/design/tipi-heritage-of-the-great-plains-review.html>

in his study looking at how to avoid public controversy in exhibitions, that historians almost never agree on how events unfolded in the past, yet the museums still try to represent a “solid front”. Perhaps this is because some museums still wishes to keep up with their reputation of being institutions of great knowledge. With this attitude, as a result, the visitor receives the false representation of information. Shettel argues that, in order to amend this, museums could start adopting more honest and open approach to interpretation, and “inform the visiting public that history is not an exact, agreed-upon science” but it develops with our own development (p.271). For better functioning interpretation, Shettel presents five check points that museums should consider to apply as a set: Balance, Objectivity, Non-confrontational attitude, being Non-dogmatic, and being Conditional.

As Lacan (Lacan 1992) states¹⁴, “thing can only be represented by emptiness, precisely because it cannot be represented by anything else” (p.129). If the interpretation is incomplete or too selective, the information could no longer be relevant. As a result, the curator’s role would start to vanish and relatively the museum object could turn into a ‘thing’ as they would lose their primary function. “We begin to confront the thingness of objects” says Bill Brown (2001) “when they stop working for us”.

In a similar logic, whether there is an important object placed inside or not, a glass case in a museum can only be a ‘thing’ if its contents aren’t perceived or conveyed truly by the spectator. It is the successful object interpretation that will bring that object back to life and eventually into the hands of the visitor; directly or indirectly.

2.7 EXHIBITION VISITS AND OTHER TACTILE EXHIBITIONS

Not only to review the literature, but also to learn from artistic styles and habits of other curators, I visited many exhibitions throughout this research. They did not always seem appropriate as they were not in the first place labeled as ‘tactile exhibitions’, however they still provided me with the experience I needed to systematically review exhibits from the angle of this research rather than being just a visitor. It must be said that there were not many tactile exhibitions available to visit in comparison to the non-tactile ones, and when they happened they did not always fulfill the need of my research. Here, I will selectively talk about some of the relevant ones as they have the power to open doors for academic projects like this one. Touch-tours of museums,

¹⁴ Brown cites Lacan on the same paper

specialist tactile museums which were already discussed earlier in this chapter of literature review, and embossed replicas as part of display systems are excluded from this selection

BlindArt¹⁵, a charitable organisation that focuses on creating inclusive and accessible art, showcases both sighted and visually impaired artists' work for this purpose. They produce tactile exhibitions that are so rare to find. All artworks in their exhibitions are designed to be touched, just like Tactual Explorations exhibition. Just after Tactual Explorations, their 2006 Sense & Sensuality exhibition opened to public. This exhibition included highly inspiring and aesthetic artworks from artists with and without visual impairments. What makes the Tactual Explorations exhibition different to the series of Sense & Sensibility exhibition is its direct approach to artist interpretation through touch rather than only focusing on tactuality of the artworks. Also the Tactual Explorations concept focuses on a theme, while the Sense & Sensuality's theme is open as long as the artworks meet the brief of creating tactile artworks.

One good and relevant example of a tactile exhibition is Kenya Hara's 'Haptic: Awakening the Senses' exhibition that travelled from Japan to London's RIBA. According to the information supplied by Hara's assistant Kaoru Matsuno, through personal communication, Hara commissioned each artist according to their backgrounds and all artworks of the exhibition were purposefully created for this project. Matsuno says:

The participating artists were selected by Kenya Hara with his vision. We gave them the orientation individually and made brainstorming together to find a characteristic solution for each.

The exhibition included artworks that are based on form or colour, but would urge haptic senses. Each object included a sample tactile guide to touch, in order to have a feel of the material. Even though this was a ground-breaking project, the 'do not touch' signs made it clear that the real size or form of the objects were not to be touched, and the interpretation relied on tiny little pieces of material stuck next to each object (Figure 2-4 & Figure 2-5).

¹⁵ <http://www.blindart.net/home>

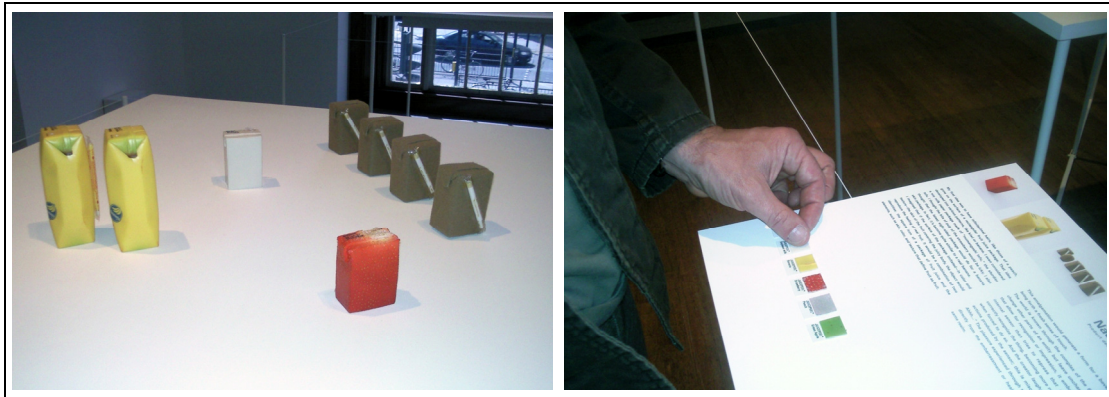


Figure 2-4: Naoto Fukasawa's Juice Skin exhibit, and visitor interaction

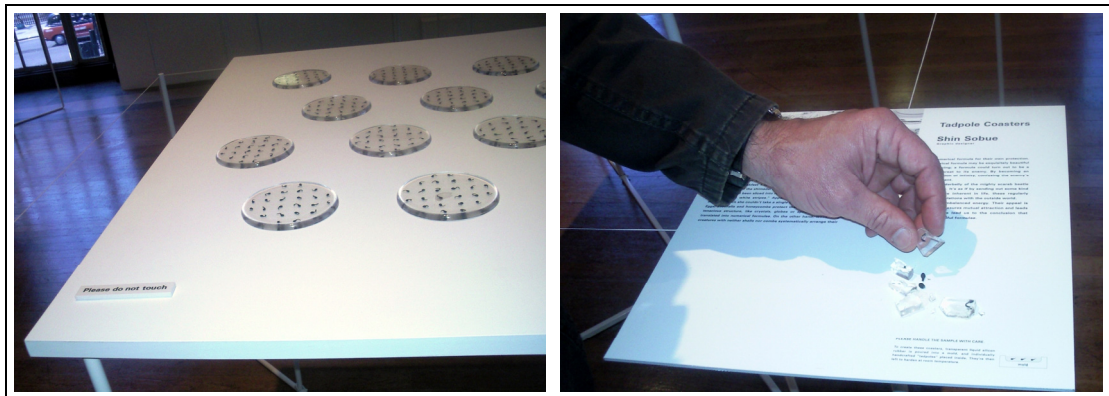


Figure 2-5: Shin Sobue's Tadpole Coasters exhibit, and visitor interaction

Even though it was not displayed as part of a tactile exhibition, a good example of tactile interaction with exhibition object for me comes from an earlier visit to 51st Venice Biennale in 2005. This exhibit is a dry-mud sculpture of a life-scale hippopotamus made from the mud collected from the Venice canals (Figure 2-6). On top of this realistic creature, a person sat and read a newspaper; leaning to the side on the sculpture every now and then and when changing position. Not only had the sustainable approach to creating artwork made this piece very amicable but also the person sitting on it in such comfort conveyed a tactile feeling to the visitors. In this case, visitors did not have to touch the object in order to feel the tactility of the surface, although they were allowed to. Examples like this became very important for this research later on, not only for its inspiration for touchable artworks, but also for feeding more data and thinking into the concept of tactile interpretation with visual information when viewed free from the physical sense of touch.



Figure 2-6: Hope Hippo (2005) Mud Sculpture by Jennifer Allora & Guillermo Calzadilla, 51st International Venice Biennial (Artnet Magazine 2005)

2.8 HAPTIC TECHNOLOGIES AND ITS APPLICATIONS

A good definition of the word ‘haptic’ can be “relating to or based on the sense of touch”, and it derives from the Greek *haptesthai* which means “to touch” (Merriam-Webster 2007). Haptic technology simulates the sense of touch using computers, creating a two-way interaction with a device. The study of Haptics has emerged from robotics and computer graphics working together to create powerful visualization systems. Today, high performance force-feedback haptic displays are still relatively expensive to produce, however medium-range ones are becoming more affordable and promise interesting possibilities for the future. As these devices are becoming more widely available, the software is getting easier to use and costs are coming down and it is now possible to design systems that introduce these technologies to everyday use.

The first stages of the literature survey of this research involved exploring haptic devices currently available, such as the PHANTOM from SensAble Technologies, a haptic computer interface which makes it possible to feel virtual objects by providing the

forces to the user. The software behind SensAble's technology is the GHOST (General Haptic Open Software Toolkit) SDK, an object oriented toolkit in C++ that realistically simulates physical interaction. Once incorporated into the 3D applications, GHOST SDK works as the "physics engine" handling complex computations and enabling developers to work with simpler physical properties such as location, mass and friction. GHOST and creative haptic software such as ClayTools come with libraries of 3D objects and touch effects to add a more advanced physical dimension to "touch" simulated projects.¹⁶

Using haptic devices and interfaces, developers around the world have been making significant gains in Haptics research and its applications. There are many examples to the practical use of haptics including systems for teaching medical procedures to novice surgeons, computer games, military training programs and music notation systems for visually impaired musicians.

Researchers from Boston and London have already shaken hands virtually over the internet using SensAble's force-feedback device Phantom (BBC 2002). Being the first "transatlantic" handshake, this collaborative work from UCL and MIT aroused much curiosity among the press. Although it was disappointing to some who expected a more realistic handshake as UCL and MIT announced (Foster & Highfield 2002), it was still a very important achievement with regards to developments in haptic communications.

'iCare Haptic Interfaces' research at the Center for Cognitive Ubiquitous Computing of the Arizona State University incorporates wearable video cameras with haptic datagloves, in order to achieve a fully automatic system to allow visually impaired people to explore objects by touch (CUBiC 2005). A real-time system very similar to iCare was also proposed at the development stage of this research, however due to the availability of the existing research in a very similar idea (i.e. the iCare project) resulted in the change of direction.

Recent years have undergone even more impressive and useful developments in assistive technologies. Addressing the role of highly sensitive touch receptors on the human tongue in communicating tactile information has the potential to open doors to more sophisticated research. An important example to this can be the BrainPort

¹⁶ SensAble Technologies Inc. <http://www.sensable.com>

technology that allows seeing through human tongue and as a result restoring sight for the blind without surgery. One output of this technology is called BrainPort balance device which is currently marketed by Wicab, Inc. as a therapeutic tool designed for patients with chronic vestibular disorders, and actively used as a sensory substitution device to restore balance and motor control of these patients. The research team describes the process as follows:

Visual information is collected from a video camera and translated into gentle electrical stimulation patterns on the surface of the tongue. Users describe it as pictures drawn on their tongue with champagne bubbles. With training users may perceive shape, size, location and motion of objects in their environment (Wicab 2011).

This is a very new technology and even though some applications of it is currently available, the research is still continuing to develop the balance device as well as the vision device concepts further. One big step towards taking the BrainPort research to next level came from a collaborative project between Wicab, Inc. and Carnegie Mellon University's Robotics Institute along with the Quality of Life and Technology Center, introducing a better perception and a face detection capability to the existing technology. Following a number of successful user-testing and assessment sessions, the project received further funding from the Defense Medical Research and Development Program in United States to continue the study. Later on the team joined forces with the University of Pittsburgh Medical Center. Research is currently developing with promising results and ideas for even more potential applications.

In a way, every project redefines or adapts the definition of Haptics according to their use. Accessibility is becoming one of the main objectives of haptic applications in many current research studies. That said, accessible approaches to Haptics can be seen in some earlier projects, too. By incorporating a tactile display, Wearable Group at the Carnegie Mellon University took their own research to the next level, and adapted their wearable computers for industrial and military applications for deaf and/or blind users' needs, and for environmental conditions that would create distortion for visual and sonar communication (Gemperle *et al.* 2001). Research into wearable Haptics has developed even further in recent years. In 2009 The Haptic Guide, an electronic belt, was developed as a result of a competition organised by Nokia. This wearable device navigates its wearer to a location of a geo-tagged photo, without relying on audial or visual senses, by connecting to a Nokia N900 phone via Bluetooth radio signals, and combining various compasses and GPS data to determine the location. Haptic feedback then gets provided to the wearer through small motors creating vibrations along the length of the belt (Dalby & Plambeck 2009). Prototypes of this project were

demonstrated to visitors at the Victoria and Albert Museum's Decode exhibition on 27 & 28 February 2010.

Study of emotion in haptic interactions can be the way forward in producing more realistic haptic experiences for museum visitors. This is because it would open doors to accurate measuring devices for human's emotions when examining touch-based replicas. Although there is not enough research covering combined research areas of Haptics and affective computing¹⁷, researchers at the Simon Fraser University and the University of British Columbia in Canada, have been studying the affective touch in computer interactions. They took their inspiration from the affectionate relationship that humans have with animals, and they produced a prototype called Hapticat, an affectionate computer with four-degrees of freedom and emotion mechanisms that enable Hapticat to express itself to its interactors. These mechanisms produce five basic cat-like behaviors and the haptic rendering enhances the simulation. The creators of Hapticat chose this domestic animal as their interface because a cat in real life provides many types of tactile feedback when being interacted with (i.e. its weight on one's lap, texture of its fur, its warmth, the vibrations produced from purring, force feedback while pushing with paws etc.). Researchers invited number of visitors to interact with the cat on their lap, with and without the Hapticat's functions switched on, and were asked to carry out some tasks, in order to compare reactions. (Yohanan *et al.* 2005). With these ideas behind, devices like Hapticat do become more than just responding-robots, as they can help observe and measure users' reaction as a research tool to study tactile senses and add to the Haptics research by creating more emotive results

As well as developing single-contact haptic interfaces, researchers have also been working on multi-point haptics. These interfaces send forces to more than one finger and let the users feel as if they were holding the object, by giving control on multiple points of the surface. To enable blind and visually impaired people to have access to 3D computer graphics, The EU GRAB project has been developing a two-point haptic interface where users could interact with the 3D computer visualizations. By wearing the two thimble-like attachments on the thumb and index finger of one hand, or two index fingers of both hands, users feel the contacts and the control on their finger tips and grasp the computer graphics freely.(Sevilla 2006).

17 Affective Computing is computing that relates to, arises from, or deliberately influences emotion or other affective phenomena (From MIT Media Lab <http://affect.media.mit.edu>).

2.9 MUSEUM TECHNOLOGIES AND AUGMENTED REALITY (AR) RESEARCH

With the introduction of computers into art, the traditional concept of the museum has changed dramatically (Heim 1998). The first recognized form of computer art is known to be Ben Laposky's 'Oscillons' created in 1953 (DAM 2005). Since then the computer technology has been evolving continually, and the museologists have been focusing on different approaches in applying these technologies into museums. Although outcomes of these experiences have been very useful both for researchers and museologists, there isn't a defined approach to the correct museum programming (Reid & Naylor 2005).

In 1990, researcher Tom Caudell at Boeing coined the term "Augmented Reality" (Ditlea 2002), and with his colleague David Mizell in 1992 presented their first head-mounted see-through AR system that made an existing manual manufacturing process at Boeing factory less complicated and more usable (Dias *et al.* 2004). Caudell and Mizell called this display system HUDset and argued that the successful implementation of the system would also reduce the costs for the factory by providing an augmented system driven by less complicated inexpensive microprocessors. Also, as opposed to virtual reality applications that rely on heavy graphics, the PC class processors implemented in this system provide enough operational power to compute simple graphics in real time (Caudell & Mizell 1992).

Haptic technology is currently being used in some museums, and there have been some museum-related Haptics projects aiming to convey sensory information of museum objects to the visitors. Although the concept and usage of these systems are different than the main objectives and purpose of this research, these projects remain very valuable and historically important to Haptics research in museum environments in general by providing valid user feedback. The majority of the current AR research in museums is concerned with the technology itself; or more precisely, it is very common to see technology-driven digital applications to oversee the importance of the content (Reeves 2004). Not only the technology grows so quickly without allowing enough time for sufficient amount of conceptual applications to take place, but also sometimes these applications do not go further than displaying the possibilities of the newly-emerged technologies. Unnecessary and irrelevant haptic feedback on some mobile phones that can't be disabled such as Droid X of Motorola; and the over-used screen-based touch applications in devices such as the Canon PIXMA printer¹⁸ that do not enhance

18 Review: http://www.pcworld.idg.com.au/roundup/377055/canon_pixma_printer_reviews

usability, can be examples to how some features are included just because the technology is available.

On the other hand, this speedy development of the background technologies can bring many benefits to research projects, if applied on the basis of good sound structural concept through collaboration in order to bring out the best of the individuals' expertise, not only focusing on the technology side of things. One important example to museum Haptics is the "Museum of Pure Form" project that was realised as collaboration between University College London, PERCRO & Scuola Superiore Sant'Anna and Uppsala University. The Pure Form system lets visitors interact with the 3D scans of sculptures through an haptic interface and audio narration (Jansson *et al.* 2003) and can be defined as a virtual museum that provides exploration of a museum object with the combination of scanned 3D images, new media, and defined architectural space¹⁹. Four museums actively took part in the project by hosting and organising temporary public exhibitions. The Museum of Pure Form is currently exhibiting at the Museum of Opera del Duomo in Pisa and they regularly attend international events with their PureForm installation (Museum of Pure Form 2004). This project is considered as an important example not only for its relevance to museums Haptics, but also for aiming to provide better surface definition in 3D representation of an original museum object.

Back in April 2001, researchers, and art history students at the University of Southern California created a haptic exhibition of daguerreotype²⁰ cases of miniature photographs for the Fisher Gallery of their institution, as part of a larger exhibition of early photographic techniques. Although these objects used to be considered as personal items that could be handled regularly, the museums have been protecting them with a 'hands off' policy due to their sensitivity to touch. The idea behind the project was to bring some of the "personal interaction" back to these objects by creating a haptic simulation of them in a multimedia kiosk (Lazzari *et al.* 2002). There were some issues with the digitization of the object due to technical limitations which resulted with digitized objects to display some holes in the bottom and some on the surface. These image accuracy problems were also attached to the manual-scanning process as it was

¹⁹ <http://www.pureform.org>

²⁰ Daguerreotype is the first commercial photographic process, introduced in Paris in 1839 by Louis J.M. Daguerre. Each daguerreotype consisted of a copper plate, coated with silver, which when sensitized with iodine vapor, produced silver iodide. After a long exposure in the camera, the positive image on this surface was developed by mercury vapor. (From Artlex Art Dictionary, <http://www.artlex.com>).

very hard for the operator to hold the hand-held scanner steadily. Because of the highly reflective nature of the photographs, the result of the digitization depended on the angle very much, and changed simultaneously with the movement as it would be on a mirror; therefore the technique proved incapable to accurately model the daguerreotypes. However, the researchers rose above these obstacles and proposed the idea of a 'virtual mirror' in order to bring solution to problems in capturing the two-dimensional reflective object smoothly. Virtual mirror is now presented as a physical interaction device that simulates a mirror on a handheld LCD screen²¹.

Application of haptic technologies into museum settings are still in development stages and is in need of further research to explore the role of touch in enhancing visitor experience (Prytherch & Jefsioutine 2007). Although hands-on systems like above are very significant developments in museum Haptics, when technology is kept in the foreground, the actual experience remains remote and almost does not involve the object's presence in its application. My research fills this gap by re-introducing the human element to reinterpreting texture information only by using technology as another medium. This is further discussed in the Critical Discussion & Analysis chapter.

2.10 SUMMARY OF THE CHAPTER

In this chapter I addressed the relevant literature not only to appreciate the influences and inspirations, but also to show how my research takes a different angle in testing the value of touch in museums. Although the review was written in the format of reporting information, there was a hidden narrative along with a discussion evolved throughout the research. The subheadings reflected this narrative. The human element was linked to the role of touch in our daily lives, history of our existence and how to represent information to all by using this sense.

I started the review with declaring my position and how I would approach the sense 'touch'. I then moved on to other elements of this research such as Inclusive approach and museums. Whilst introducing the inclusive design within the Universal Design principle, I defined my understanding of the concept and gave examples to highlight my views. I took a strong position against designerly assumptions and exclusivity, in return promoted the idea that an inclusive interface could only be realised through real

21 The project's website: http://imsc.usc.edu/research/project/virtmirror/virtualmirror_tech.pdf

touch by encouraging actual physical presence rather than virtual. I touched the 'do not touch' policy of the museums by presenting the two sides of an argument and declared that my research is about providing solutions to this policy not to take side against it. Throughout the literature I welcomed others' ideas and acknowledged the value of their work. On the other hand it was my wish to convey to the reader of this thesis that my open-mindedness towards the development of understanding of touch also came with its strict views. For example I deliberately took a position against using technology for the technology's sake and paid a better attention to access and artists' involvement instead, regardless of the technologies involved. Technology was seen as a medium. That said, the relevant technologies were still discussed and put into perspective within the realm of this research. With this objective, I positioned my research as a step towards understanding the value of touch in museums by accessing the untouchable and inviting artists to achieve this. Overall I filtered out my journey from this knowledge as the practice of touch whilst studying the human condition it is attached to. The literature review reflected this value of the lived-experience.

This Literature Review chapter has built on the previous chapter of introduction by putting the research topic and objectives into context. The next chapter, *Methods & Methodology*, will clarify my research approach by drawing examples from my practice work which is formed of four projects. These projects will be explained in the progressive chapters after the methodology defined. In a way, the forthcoming methodologies-chapter should form a bridge between the projects of this study and the literature. However the reader should take the initiative to view it as an 'interlude' of background information before proceeding to the individual project chapters. Either way, the next chapter is aimed to address the 'how' of the thesis without separating it too much from the 'what'.



Figure 2-7: June, one of the blind participants of the study examining the replica

CHAPTER 3: Methodology & Methods

Overview

This chapter will explain the systematic approaches and methodology behind the behaviors and actions attached to my practice and its theory. Although it is not an aim to introduce the projects of this research fully at this stage, there will be specific references to the projects, in order to elaborate on relevant points in the methods, as and when necessary. The projects will be defined and explored deeper in the chapters following this one.

The bricolage of methods discussed in this chapter reflects the interdisciplinary nature of the research. Moreover they illustrate my practice and its realisation through my separate roles as part of the study. In order to validate my methodological choices, I also refer to some PhD theses examined within the last decade as well as other scholars' relevant published work on conventional and emergent theories such as feminist philosophy of science and interpretation. Because this research uses practice as a means to collect data, as well as seeing the practice as the source of data at the same time, a special attention is given to conveying how this study sits within the academic spectrum. Therefore a discussion about recent approaches and understandings of both practice based and practice led creative research is seen to be necessary to take place in this chapter.

3.1 APPROACH TO METHODOLOGY

This research adopts a creative practice research methodology in general; and realises it with a reflective and participatory approach borrowed from action research within an interpretive research paradigm. The main research strategy deployed is practice-led¹. Rather than staying within the boundaries of qualitative research, the study seeks help from the manifesto of performative research which is declared to be “an alternative to the qualitative and quantitative paradigms by insisting on different approaches to designing, conducting and reporting research” (Haseman 2006). This application of multi-methodology is represented as a bricolage which is a hybrid process and natural to practice-based creative research (Stewart 2007). Largely because of the topic’s interdisciplinary nature, the thesis offers both theoretical and practical contributions to a wide selection of fields, including Museology, Haptics, and Information Design. In summary, my creative inquiry method was fully supported by frameworks of performative and interpretive research through reflective action.

In her successfully defended practice-based PhD thesis, artist and crafts-maker Emma Shaw (2007) declared her own art practice as her “main method and methodology”. She outlined a “Practice Manifesto” and within this manifesto she employed “artistic” methods and methodologies which included creating artworks, taking notes, making sketches, photography, concept-mapping and creating collections in the form of images and text. In a similar fashion, I declare my methodology, in its broad sense, to be my creative practice research methodology, and support it with accredited research methods which I describe in this chapter to show how it was realised and described as the practice of touch.

The Tactual Explorations project was especially created for this thesis in order to observe visitor interaction with a tactile exhibition that interpreted a selected museum object as an interface only to that object. An exhibition of this kind was not available hence it became necessary to make that shift towards creating a unique exhibition in order to collect appropriate data. This starting point then led me to create a new format of an exhibition, which resulted with the public event that not only created the type of exhibition I had in mind, but also offered artists, visitors and people from many backgrounds the chance to be part of a project.

¹ Please refer to “Creative Practice Research Methodology: A selective definition” on page 77 for further explanation of use of practice in my research.

My main practice can be defined and located within the collective operations of an information designer, artist and a curator. It is a very common phenomenon in practice-related research for practice-based PhD researchers to describe themselves through their experience in their specialist field. After interviewing 50 practice-based research students, Hockey (2003) reports that all of these students invariably depicted themselves as a “creative person or individual” and referred to their creative-selves with their specialist title such as photographer, designer, painter and so on.

It is not uncommon either for traditional practice-based researcher² or the more unconventional creative researcher to operate in number of roles in doctoral research. For instance, by clearly defining various roles undertaken such as mental-health nurse, visionary lead, facilitator of meetings, writer/editor of proposals and so on, during his action-research PhD inquiry, Stickley (2007) touches on the importance of these multiple roles in shaping his research project and himself as a reflective researcher. Coming from an applied theatre background, Mangeni (2007) too undertakes multiple roles within his research. At times he acted as a teacher, workshop reporter, and facilitator of playmaking skills as well as researcher. Presenting his adoption of multiple roles as a necessary requirement of his use of qualitative feminist research methods, Mangeni signifies his needs as a researcher to be an important and integral part of the research analysis.

My multiple roles perform important functions to each stage of my research as they were introduced and/or evolved, as and when needed throughout the inquiry. In addition to my primary roles, I performed some secondary tasks such as exhibition organiser, project manager, writer of creative briefs and proposals, fundraiser, graphic designer and usability tester at times as part of this research. I consider these roles to be supportive to the main ones for practical purposes. In addition to this, by reflecting on action, I take the position of a participant along with other individuals selected to contribute to the exercises described in the sections of this thesis dedicated to practice elements. A table displaying and comparing my multiple roles in relation to individual projects and data gathering through action can be found on page 70 for reference. This table is presented further down in the chapter instead of this section, because it includes some elements that are explained after this section.

² By ‘traditional practice-based research’ I refer to studies in health practitioner’s profession, usually through action-research.

Being a “practitioner-researcher” on the other hand does not suggest wearing two alternate hats of practitioner and researcher together or separately, but only one hat that merges the two tasks; or reflects the differences between both tasks by still taking place in the study at the same time (Gray 1996, p. 7).

Before I move on to next section of this methodology chapter to explain my experience of the methods employed, with his permission, I quote from David Durling’s reply to a question that I raised with regards to examination of practice-based PhDs as full thesis instead of a separate creative artifact, at an academic newsgroup³:

My view is simply that it is the thesis that is examined. Period. All evidence must be contained within the thesis. For the avoidance of doubt, by 'thesis' I mean something written by a doctoral candidate which explains fully the research conducted and, if designing has been part of the research process explains its use, benefits and limitations, and which may demonstrate the artefact or artefacts through visual means including drawings, video, sound etc. as appropriate.

By taking the quote above as a guide, this thesis illustrates a 50% conventional research and 50% practice, and represents the 100% of the final submission. Although the images presented within the thesis shows a good variety of actions from the practice, an accompanying appendix (and a DVD of works) contains supporting documents and further information to demonstrate practice. The practical elements are documented with photographs of all projects undertaken for this research; and through video footage of some of the activities that relate to my performance as a researcher as well as the participants’ actions. This includes user-feedback exercises, Tactual Explorations event (its workshops, discussion and exhibition); and in the case of unobtrusive data collection, tables and documents showing steps taken are included in the relevant chapters and in some cases in the appendices. All interaction with audio or physical elements of the experiences (i.e. haptic simulation and Braille transcription) are documented through photographs and included in discussions and/or evaluations in their respective chapters.

3.2 MY PRACTICE IN ACTION: CURATORIAL & ARTISTIC METHODS

As a result of a heuristic approach, as well as using a bricolage of naturalistic methods described in this chapter, one large project and three supporting projects were realised

³ This conversation is available to public online: <http://permalink.gmane.org/gmane.comp.hci.phd-design/10605>

as the practice element of this research. An ongoing literature review which is reported with the previous chapter informed the project; and theoretical discussion fed the ideas and processes developed during this time. Although the projects have their own chapters, here I will list my main actions in order to introduce the reader to the main stages involved in realising this research.

In this thesis, I considered and practiced curatorship to be an arts-based method that plays a vital role in my research and supports my other selected methods in investigating the role of touch in exhibition settings. Although this thesis is not aimed to be a full curatorial study, and curation was considered only as part of the ‘making’ process as well as the practice of touch, here are two different projects within this thesis where a curatorial approach took place. The first one is the Tactual Explorations exhibition which involved commissioning artists to create new artworks for the artist brief that I wrote for the project; the second one is the Haptic Vision - Tangible Images project, which involved collecting and selecting from existing photographs.

As mentioned in the previous section, the Tactual Explorations project was formed to be explored as a tactile exhibition that mainly focused on a selected museum object’s texture properties. As such an exhibition format did not exist, it was necessary to create one as part of this study. My reason to resort to curating this exhibition myself, rather than working with an established curator was the hypothesis of ‘it is possible to practice the process of curating a tactile exhibition to learn more about touch’. Here, I refer to McNiff’s (2008) explanation of how art-based research is practiced:

Rather than just reflecting upon artistic phenomena in case studies, interviews, and other explanatory texts, students now ask if they can pursue the process of painting to learn more about a particular aspect of painting or elicit the creative imagination to let the characters in their expressions describe themselves and their experiences, and so forth. (p. 30)

Arguing that this type of arts research would require commonsense, decision-making and intuition, Cole and Knowles (2008, p. 61) introduces the “instrument” to be the “researcher as artist” in addition to researcher as instrument that is usually seen in traditional qualitative research. On the same note, the curatorial approach applied to



Figure 3-1: Preparing the gallery for the Tactual Explorations exhibition Private View

		Artist	Curator	Information Designer	Manager	Reader	Writer	ACTION METHOD	
								Observing:	Participation:
								- User feedback - User behaviour	- Critical
PRACTICE	User-feedback Exercise			✓	✓	✓	✓	- User feedback - User behaviour	- Critical
	Tactual Explorations (Exhibition)	✓	✓	✓	✓	✓	✓	- User feedback - User behaviour - Artist feedback - Tactile parameters	- Creative - Critical - Performative
	Tactual Explorations (Workshops)				✓	✓	✓	- User feedback - Artist feedback	- Critical - Performative
	Tactual Explorations (Event Management)	✓		✓	✓		✓		- Creative - Critical - Performative
	Exhibition Visits					✓		- Visitors - Myself - Curator's style	- Critical - Performative
	Haptic Vision & Tangible Images		✓	✓	✓	✓	✓	- Artist feedback - Tactile parameters	- Creative - Critical
	Touching the Bronze Bust of Sophocles	✓			✓	✓	✓	- User feedback - User behaviour - Tactile parameters - Myself	- Creative - Critical - Performative
		ROLES							

Table 3-1: My multiple roles reviewed in relation to individual projects and data gathering through action

this research is quite individual, however it very much relies on artists' (including myself as one of the artists) and audience's (again, including myself as one of the participants) feedback and input.

In terms of collecting data through action, I focused on curating art as an *information designer*; curating an exhibition as artist and collecting as a curator, as well as making artwork as one of the artists of the Tactual Exhibition. Table 3-1 illustrates my roles in relation to an individual project or exercise of this study; while showing the type and nature of action methods took place. This table is different to the table at the end of this chapter as they analyse the projects within different frameworks.

As a curator, my practice involved experimental work, and artist-commissioning as well as exhibition design with specific reference to information design. Information designer's role is to provide a good communication between a product or service and its user. In other words information design can be applied to create usable interfaces. Approaching art exhibition curation as an information designer allowed collecting user-focused data. Even though my background is Graphic Information Design, I use the term information design loosely, because just like Raskin (1999, p. 342), I too have a problem with this title in general that the information cannot be designed. What is being designed is "modes of transfer and representations of information. However, this term is widely used in academia, and use of any other term might confuse the meaning with another field. Because of this reason I continue using the term *information design*; though I have to make it clear once more that it is not my intention to design any abstract entity such as information, but only refer to its representation.

For instance, in the case of Tactual Explorations, I have designed the layout of the exhibition room in a circular manner. Once the user picked a reference point, they could interact with the rest of the exhibition as one interface that allowed interaction with the focus-object through the navigational information design. This interaction could be through accessible audio points in different formats available to the visitor, Braille labels in addition to ordinary labels presented on plinths, and wall signage. In other words, there were many forms of representation of the same information. This allowed optional and inclusive information only by choice; visitor was free to ignore or welcome any of these available forms of information represented. In addition to this, visitors were also allowed to make physical alterations to the way any of this information was displayed, in order to comfortably interact with what is being

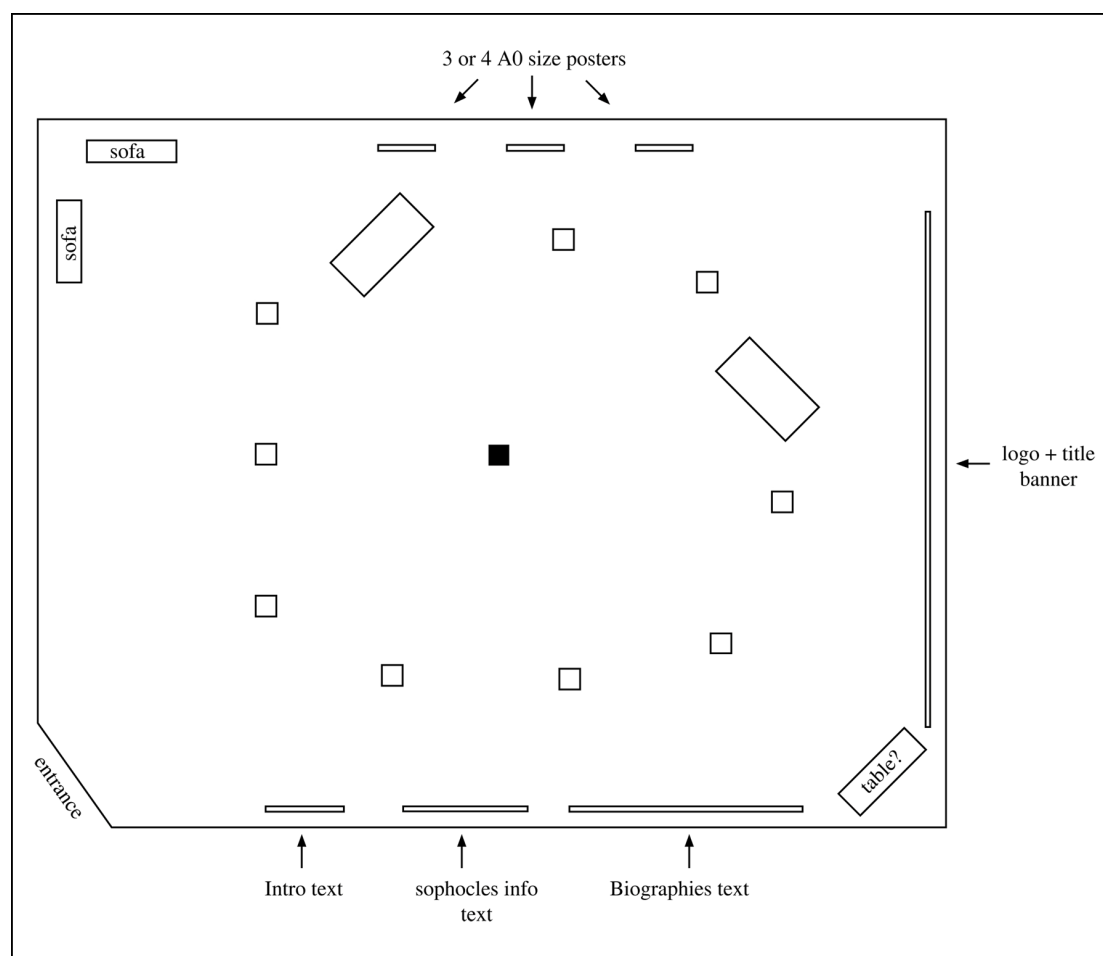


Figure 3-2: Gallery floor plan for Tactual Explorations exhibition

provided. For example they could pick and re-attach the labels at whatever level or angle they desired, or turn the artworks around to make them more adaptable for their visual impairment. Not everyone made use of these, however the option was there.

In order to support experimental curation approach, I backed up the exhibition design process with proven methods. For example the Tactual Explorations project followed the model shown on Figure 3-3 which I developed from the cyclical project model⁴ explained by Dean (1994, p. 9). In Dean's model the arrow points to right, to represent events within timeline. In my adaptation it points down to represent arrival to a result as continuity to the next project. Also in Dean's model individual stages do not cross

⁴ Velaar, Jan and Han Meeter (1989) Project Model Exhibitions, Holland: Reinwardt Academie, p. 4.

over, where as in mine there is a deliberate collision of production stage to continue into functional phase. This was necessary in order to allow room for practice and experimentation to remain part of the theory and research process. Full process of this exhibition production process can be read in the *Tactual Explorations* chapter.

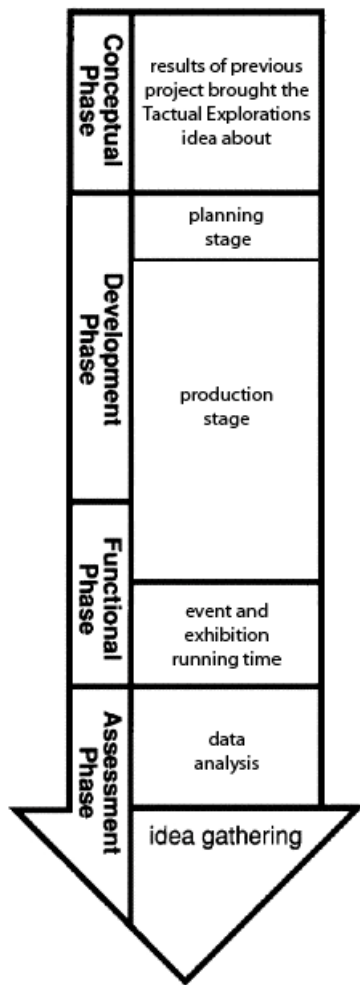


Figure 3-3: Exhibition project model

In the planning stages of the exhibition, as well as the inquisitive touch that is taken as a norm for this thesis, I also decided to address the value of instructive touch in communicating with museum objects. To realise this I included six workshops that dealt with the role of touch in art-making as well as creating accessible exhibitions. The use of workshop as a method not only allowed me to observe but also supported the participatory approach that this research takes. Some elements of instructive touch is also present in the Haptic Vision & Tangible Images project as I was asking the participating authors to look at a photograph in a certain systematic way. As it can be read in the Other Projects & Experiments (Practice) chapter, authors were asked to observe their sensory reaction to the potential haptic stimulus created through visual information on their given photograph.

In the case of the Haptic Vision & Tangible Images project, artistic side and my role of curator slightly changes. The ‘curator as a collector’ replaces the ‘curator as commissioner’. This act of collecting was also very systematic. To improve my understanding

of curation I have also visited numerous exhibitions which resulted with my role as an ‘exhibition visitor’ to be defined further.

As well as curation through information design and workshops, data was realised through artistic and traditional research methods. As an artist, data collection involved using sketchbooks/notebooks, taking photographs, and creating exhibition-specific artworks. This includes hands-on techniques such as laser-scanning the replica bust (Figure 3-4) for the creation of a haptic simulation.

The practice involved great deal of exploring processes by touch. At this stage, I would like to explain one of the hands-on techniques I applied to my art-making process to highlight the role of touch in realising many parts of this research. This work in discussion is created in addition to the main exhibition pieces that formed the tactile interface. This was for reference purposes like the rest of the work placed on the walls (all tactile elements in the exhibition were presented as three dimensional work on plinths) and its aim was to highlight the photographic information that was attached to the original bust of Sophocles. After scanning the bust, I focused on the geometry of the 3D model created. I took a screen image from a profile shot, and enlarged it as big as it could get so I could see the geometric shapes that formed the bumps and holes on the surface of the bust. I then printed out this image with a plotter onto a heavy coated paper and hand painted sections with dark grey graphics fineliner pen to bring the less obvious bumps on the original surface to visibility. I defined these areas by constantly



Figure 3-4: Scanning the replica bust with Faro scanner at Metropolitan Works

touching the replica, as well as my other exhibition piece 'Surface' which is an engraved brass photograph of the highlights formed on the bust. Initially I had created this image by studying some enlarged photographic details of photographs that I took as reference for the other exhibition artists. While touching the surface on these two reference objects, I confirmed my sense of touch with the photographic information. Once I achieved more geometric shapes on the printout, I digitized this image again but this time using a high resolution industry level 2D scanner. I finished off the digitized work by retouching areas using a Wacom tablet with its stylus pen. I then printed this image on a large canvas to achieve painted look and less shine. I also printed the original photograph which I previously took to study this image on canvas, in order to create a two-piece work for one of the walls of the gallery, to be hung side-by-side (Figure 3-5).

Sense 'touch' was applied and referred to the making of all works of the Tactual Explorations. But it was not only the creation process that involved touch. I must include some of the other acts of touch that shaped my discussion throughout this research. It was very important for me to see some form of tactile interaction with the prohibited and precious Bronze Bust of Sophocles in the museum. At all of my visits to the British Museum that I arranged with blind participants I requested from the gallery attendant to allow us to touch the glass case of the exhibit. Each time I asked this question there was a different attendant and all of the responses I received were different. In the end, each time, they agreed and we got to touch all over the glass case. My intention was not to harm anything in the museum in anyway, but to be able to go one step further to bringing myself and the participants closer to this object. Whilst we talked about the exhibit, I wanted them to walk around the plinth to gather a sense of its presence within the room. This spatial information was necessary for them to locate the object inside the gallery. I also wanted to give reference points on the bust. So I took the participants hands and placed on different parts of the glass case to identify where exactly the glass case starts on the plinth, how high does the bust sit on its stand inside this glass case and how high the glass case continues above the head of the bronze bust (Figure 3-6 and Figure 3-7). For me, touching the glass case like this was the sign of our attempt to reach the object. In some ways, we were pushing some boundaries. We were in a major museum, with boundaries of touch and sight; yet we were experiencing the touch itself by engaging with an object under the umbrella of the inquiry that this thesis brings. Furthermore, we were touching the untouchableness of an exhibit.

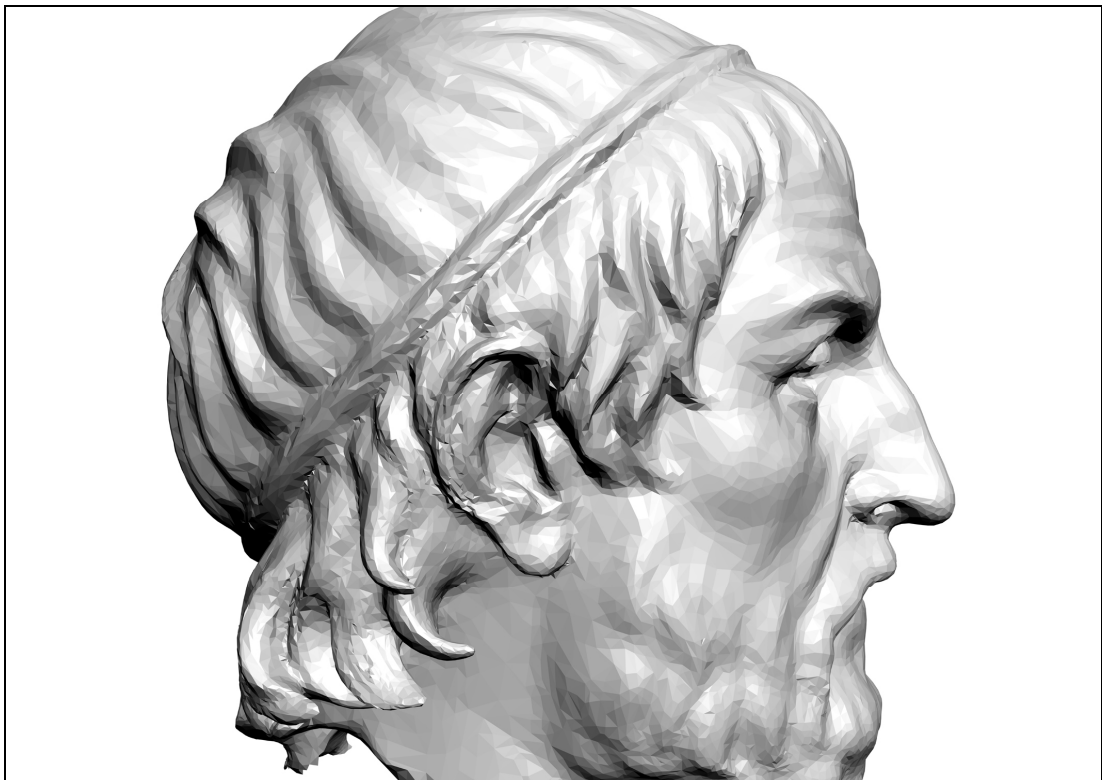


Figure 3-5: My tactile study of the surface; a two-piece work entitled 'Sophocles Now & Then'
Dimensions: 120 cm x 90 cm (each canvas)

At the User-feedback exercise, and at some parts of Tactual Exploration project (including the six workshops mentioned above), some data came from the user directly, either by surveys and questionnaires or some unobtrusive observations of their actions. All acts and creations were photographed, and in some cases they were documented by video-filming. The video footage was not needed as set-in-stone interviews but to record behavioral activities both from the point of research behaviour and participants presence at real settings (i.e. the British Museum, or Tactual Explorations exhibition). On each project of this thesis, practice of event management and writing job descriptions for main tasks provided direct communication with all the individuals that were involved in creating research-based projects, therefore leading to a systematic data collection. For example, in Tactual Explorations, artists were required to provide proposals for their artwork creation according to the artist brief supplied to them along with legal intellectual property documents at the selection process. Following and recording this process from the beginning allowed for creating a narrative approach. Also asking for new works to be created rather than selecting existing ones, not only shaped my curation style for the project, but also helped record the development stages of the exhibition, which led to creating the 'work in progress' booklet that replaced a standard exhibition catalogue by forming another representation of information. On the other hand, I as a researcher could reflect on this process not only from my research behaviour point of view, but also as an artist.

3.3 CREATIVE PRACTICE RESEARCH METHODOLOGY: A SELECTIVE DEFINITION

My practice serves two functions in this research. It is first defined as the means for collecting data, but secondly, also as importantly, becomes the source of data⁵. Because the terminology in these two separate applications of practice are commonly interchangeable in research fields; I refer to knowledge from both practice-based and practice-led research praxis. To avoid confusion and enhance continuity, I refer to the general methodology applied in this thesis as 'creative practice methodology'. Still, I consider it vital to this thesis to include a section to further explain how I arrived at this decision, and where I position my research within practice-related research:

Even though creative practice research is relatively young in the history of knowledge, there has already been a big debate between scholars about what methods and

⁵ This remark is based on an email conversation (open to public) with Dr Owain Pedgley, available at: <http://permalink.gmane.org/gmane.comp.hci.phd-design/10733>



Figure 3-6: Peter is gaining a sense of dimensions and placement of the original bust



Figure 3-7: Margo is gaining a sense of dimensions and placement of the original bust

methodology would be most appropriate for creative practitioners to apply to their research involving practice. So many different terms have been coined or applied by different scholars, such as practice-based research, practice-related research, practice-integrated research, arts-based research and so on (Haseman 2007b). Some academic institutions and scholars used these terms interchangeably for any kind of research that involved creative practice, and some still continue doing so.

One of the institutions that refer to the terms practice-based and practice-led research interchangeably is Queensland University of Technology. For instance, both of these terms appear number of times on the same page of their Faculty of Creative Industries handbook for research students, undoubtedly referring to the same notion, research that involves practice⁶. Even after some scholars such as Candy (2006a) proposed specific definitions to show the differences between practice-based and practice-led research and give to each widespread recognition, some institutions still referred to these terms as same notions. For example London Consortium (2007) on the introduction text of their Practice Research (and the Practice of Research) Seminar, clearly stated that practice research has also been known as other academic terms such as practice-led research and practice-based research.

Biggs and Buchler (2008) address this as a problem of confusion in the identification of practice-based research in the academia and how important it is to refer to actual examples of previous applications in order to create a valid argument in use of methodologies. Drawing our attention to the terminology of practice-related research in the literature of creative industries, they argue that even the minor variations or differences in descriptions of these separate terms would affect the nature of inquiry. I too agree with this argument and therefore would like to discuss it further. Candy (2006a) in the first report of Creativity and Cognition Studios' Practice-Based Research guide confirms this problem of undistinguished use of the terms practice-led and practice-based research in the academia, and that the difference needs to be formalised. In this report, she argues that:

There are two types of practice related research: practice-based and practice-led:

⁶ For example while the heading of a section reads "Types of Practice Based Research", the introduction sentence of this section starts with "Practice-led research can serve as a Method of Data Collection or a Means of Reporting"; then the heading of the next section reads "Principles Guiding the Use of Practice-Led Research as a Means of Reporting", and so on...

1. If a creative artifact is the basis of the contribution to knowledge; the research is practice-based;
2. If the research leads primarily to the new understandings about practice, it is practice-led (p. 3).

Even though this is a straightforward and clear argument and very valuable to creative research, it doesn't leave too much room for research that needs to be located in-between. Candy must have noticed this herself, as there is an additional statement on the web page of Creativity and Cognition Studios which was not included on the actual paper. According to this statement, there are some situations when both types of research can be used together but in most cases one is more dominant than the other (Candy & Creativity & Cognition Studios 2010).

After illustrating this ongoing argument, I decided to focus on where my inquiry can be placed in the current practice-related research. In order to locate my research firmly in the academic world, I believe it is necessary to be selective and offer the most appropriate definition of practice research within the current literature instead of focusing on differences.

It is commonly known that one good way of finding a solution to a problem is to revisit the original source to seek answers. For this reason I looked at how institutions currently present their practice-related PhD programs and selected a reference from Queensland University of Technology showing how they dealt with the interchangeable uses of the terms practice-based and practice-led research. The solution seems to serve both sides of the argument. They clearly defined their guidelines and requirements by dividing practice-related research into two distinctive types: "Practice as a Method of Data Collection" and "Practice as a Means of Reporting". When creative practice is used as a method of data collection for example, their requirements are set as followed (even though they refer to both types as practice-led):

Here Practice-Led Research is a research strategy offering up data for analysis. The practice is experimental and the results will be written up in the thesis. There is no reason for examiners to see the production.... Normally photographic or video documentation of the creative work will be included to support and illuminate the knowledge claims made in the thesis." (QUT2010)

I believe this is a valid place to start positioning one's research within existing knowledge. Instead of focusing on the definitions of terms, QUT productively refers to 'types' of practice research. First of all, I too in a similar fashion define part of my practice as a method of data collection, by still remaining in practice-based and

performative research. On the other hand, my practice also helps me as a practitioner to “pursue my research through practice”. Because of this reason, this research would also be called practice-led (Haseman 2007a). QUT defines this scenario as “Practice as a Means of Reporting” and sets the guidelines to the following:

Here Practice-Led Research sees the practice stand as an examinable component of the study. The knowledge claims in the work can only be made through the symbolic language of the artistic practice. The work must be witnessed and judged by examiners for the control of artistic form demonstrated within the context of the research project.

It has been suggested by Haseman (2007a) that amongst all the available definitions of practice related research, Carol Gray’s “practice-led” is the most appropriate one. Gray’s description⁷ is:

By ‘practice-led’ I mean, firstly, research which is initiated in practice, where questions, problems, challenges are identified and formed by the needs of practice and practitioners; and secondly, that the research strategy is carried out through practice, using predominantly methodologies and specific methods familiar to us as practitioners in the visual arts (1996, p. 3).

According to Candy (2006a) this type of research usually has its place in the general description of action research, which this thesis borrowed methods from. I too take Gray’s definition as a base, however as Haseman (2007-bb) points out, this valid definition can be improved; and during the recent years we have already started seeing more “sophisticated” research strategies in creative research.

Because my research handles data in both ways, this study overall realises research through practice, as much as practice through research⁸. This can be apparent in the same project at the same time, too. For instance, *Analysis of Bronze Bust of Sophocles*, one of the practice exercises discussed later on in this chapter first observes the behaviour of an invited group of visually impaired participants’ at the British Museum then observes this idle selected museum object in the presence of these participants. At the same time the exercise serves as reflection to the research behaviour I undertook in the original setting of the inquiry. The research style that takes place here is realised through practice. On the other hand, by being formed as the result of a previous Tactual Explorations project, this exercise represents practice through research.

⁷ Haseman quotes from the same section of Carol Gray’s paper; seen here is the full quotation.

⁸ Please see the Projects chapter for how this is illustrated throughout the research

Due to my research's interdisciplinary and inclusive nature, it was necessary to include the academic voices from scholars of various forms of design studies as well as art-based researchers. An example of this can be the *Haptic Vision & Tangible Images* project where writers were asked to write short essays about the texture properties of individual photographs selected especially for this project. Tactual Explorations also included work of volunteer writers in order to get real-time feedback and opinions as part of work in progress. This input not only supports the practice but also gives insight to theory and analysis as part of the written element.

McLeod (2000) divides practice-based doctoral research into three types, and argues that the purpose of written element for each type serves a different function: Type A: Positioning a practice; Type B: Theorising a practice and Type C: Revealing a practice. In the Type A research, researcher is more focused on locating (historically, culturally etc) their practice within knowledge, and the written element contextualises the art practice submitted as creative artifact. In type B research practice is always together with its theoretical framework, and recognised through its pursuer's ongoing methodologies from their experience or established artistic methods; as a result merging practice method with theory. Written element not only reports a continuous practice that took place throughout the research but also bases the thoughts behind the work on philosophical approaches. The type C research involves exposing practice where the written element's purpose is to define the process as an aid to convey the conception behind the artwork which then recreates itself as a result of what is written and vice-versa. The artwork itself is the thesis. McLeod uses the seesaw metaphor to illustrate how writing and practice cause each other's effect during the consequent phases of the research almost indefinitely; and further explains from her study of the student experience of practice-related research, how the written element performed in this type of research : "Thus the written text was instrumental to the conception of the art project but the art projects themselves exacted a radical rethinking of what had been constructed in written form because the process of realising or making artwork altered what had been defined in written form" (p. 3). If these three types of practice-related PhDs are taken as a basis for illustrating where in knowledge one's research is located, my study starts to form itself within the boundaries of type A and type B for placing practice to the heart of the research as well as approaching to theory and writing as part of research project.

Yee (2009) illustrates the same notion of dividing practice-related PhDs into different types by referring to Frayling's (1993) classification of three types of research in art and design:

1. Research *into* practice: Here, artwork or design piece is the "object of the practice"
2. Research *through* practice: When research is realised through practice, creative practice is the "vehicle of the research and a means to communicate the result"
3. Research *for the purpose* of practice: This type of research's main objective is to "communicate the research embedded in a piece of design"

Again, a boundary-based merge in research types can be applied from Frayling's classification to my research in the same logic that MacLeod's classification does. Yee also agrees that these types of research are not necessarily exclusive and can take place within one research as they do in this thesis. Another point illustrated by Yee (2009, p.3) on this subject in comparison to Frayling's classification is taxonomy of creative research that Cross (1999, p. 6) formed, focusing on "knowledge that resides in people, process or product".

1. Design epistemology -study of designerly ways of knowing (people) ⁹
2. Design praxiology -study of the practices and processes of design (process)
3. Design phenomenology -study of the form and configuration of artifacts (product)

A table at the end of this chapter, which I adapted from Yee's comparison table of six different PhD projects, shows how separate projects of this research dealt with practice and how this was reflected to form the whole thesis through methodological framework. The written piece receives equal importance in weighting as the practice.

3.4 PERFORMATIVE RESEARCH: HASEMAN'S THIRD PARADIGM

As explained in the previous sections, my research employs both practice-based and practice-led approaches by using practice as a method of data collection and a source of data; and refers to this combination as creative practice research to avoid confusion and for ease of speech. The practice-led elements such as the creation process of the Tactual Explorations project and the Touching the Bronze Bust of Sophocles study which

⁹ Cross's criteria 'people, process or product' are placed in brackets by Yee. I keep them as in Yee's interpretation to illustrate role of practice in my thesis.

involved museum visits with a focus group, are supported by Haseman's Manifesto of Performative Research.

Haseman (2006) argues that performative researchers are researchers who pursue a practice-led research, and he proposes performative research as the third research paradigm, an alternative (not as replacement but as enhancement) to the two other methodological frameworks. Those two other frameworks are quantitative inquiry and qualitative inquiry. Quantitative research follows a deductive process in order to reach research outcomes and deals with numerically measurable data. Qualitative research on the other hand operates on an inductive principle and deals with textual data as well as representing the outcomes with text only. "In some academic traditions such as Cultural Studies" says Haseman, "artefacts (things), behaviors and responses are constructed as qualitative texts". (p.2)

Again, Haseman (2006) suggests that, in general, quantitative researchers are not concerned with immeasurable human phenomenon; while qualitative researchers, even if they employ practice-related research, position their practice as their "object of study" instead of "a method of research". He then points out how in recent years some practice-related researchers have started to express their impatience about methodological limitations of qualitative research and how its insistence on written outcomes result in misrepresentation of their research. By referring to Austin's performative sentence notion¹⁰, Haseman believes that, through a performatively-working symbolic data, a third paradigm of Performative Research can solve the practice-led researcher's dilemma by supporting and enhancing the other two types of data, which are quantitative (symbolic numbers) and qualitative (symbolic words). He argues that symbolic data that works performatively "not only expresses the research but in that expression also becomes the research itself" (p.6). Haseman's argument for the need for this third paradigm can be supported by Sullivan's(2005) views:

10 Austin's "How to Do Things with Words" article can be viewed at <http://uccstuff.com/FALL2003/j-l-austin.pdf>. These extracts are selected to give an overview of the notion:

"The term 'performative' will be used in a variety of cognate ways and constructions, much as the term 'imperative' is.³ The name is derived, of course, from 'perform', the usual verb with the noun 'action': it indicates that the issuing of the utterance is the performing of an action *7—it is not normally thought of as just saying something."

"In the particular case of promising, as with many other performatives, it is appropriate that the person uttering the promise should have a certain intention, viz. here to keep his word: and perhaps of all concomitants this looks the most suitable to be that which 'I promise' does describe or record."

While criteria for quantitative results are based on the probable likelihood of occurrences, and findings from qualitative inquiries are assessed by the plausibility or relevance of outcomes, the prospect of imaginative insight remains an elusive criterion for judging the significance of research. If a measure of the utility of research is seen to be the capacity to create new knowledge that is individually and culturally transformative, then a criteria need to move beyond probability and plausibility to possibility (p. 72).

Performative research as methodology is not only for performance artists or theatre researchers; it does not necessarily seek answers only in traditional stage-based performance or drama studies. Haseman argues that practice-led research is fundamentally experiential and becomes more apparent when the researcher creates something artistic, such as a new creative form for an exhibition. For instance, my Tactual Explorations project offers a new artistic form of exhibition by commissioning tactile artworks to be created and based on a museum object's textural properties established as visual information.

In consequence of employing performative research to support my general methodology, my research straightforwardly becomes multi-method: a blend of qualitative and performative research. One of the most common qualitative research method applied into practice-led research is the method of *reflective practice*, a concept developed by Schön (1984) within action research. With the aim of connecting reflective research to performative action I quote from him:

If common sense recognises knowing-in-action, it also recognises that we sometimes think about what we are doing. Phrases like 'thinking on your feet', 'keeping your wits about you' and 'learning by doing' suggests not only we can think about doing, but we can think about doing something while doing it. Some of the most interesting examples of this process occur in the midst of a performance (1984, p. 54).

Schön in this quote does not intentionally refer to performative research, yet it helps me convey the fact that performative research and action research with reflective practice can go in harmony by addressing the same experiential and experimental elements of practice-related research. In the next section I will define my reflective practice and approaches to experimental and experiential design.

3.5 INTERPRETIVE RESEARCH: REFLECTIVE PRACTICE

My approach to reflective research, which forms a bridge between more traditional action research and practice-related research (Candy 2006), begins with what had also started this study in the first place: my personal fascination with 'touch'. For me, it is as if an inner voice constantly says 'if you do not touch, you will not know what it feels

like'. Having said that, before wanting to touch an object, there comes one previous step which is to encounter it; and this forms the route of my inquiry. To touch something is an experience in itself. Experience, in a research context, consists in a hindsight that is positive regardless of how pleasant or painful its effects are.

I describe some of the practice that took part in my research as experiential (such as information design approach in curating Tactual Explorations exhibition), and some as experimental (artistic approaches to the same exhibition and curatorial methods employed in Haptic Vision project). Furthermore it is possible to see both taking place at the same time on this project. For example Tactual Explorations project is an experimental approach in terms of its concept and hypothesis-testing; however methods followed to achieve results are grown from my experience of information design background as defined in my multiple roles. According to Schön (1984, p. 145) "in the most generic sense, to experiment is to act in order to see what the action leads to". He calls this type of experiment exploratory experiment.

It has been suggested by Bournier and Simpson (2005) that there are only four ways for an individual to know. They declare the first one to be 'reason' which is the most direct way and it can occur through deduction or logic. The second way is 'received knowledge' which refers to knowledge received from other people through spoken words or texts. Third one is 'empiricism', knowing through sensory data. Here Bournier and Simpson remind us that there are two traditional varieties of empiricism. One is induction, referred to as Bacon's science, through observation and discovery of patterns in empirical data; and the other form is Popper's science where these hypotheses can be acquired from anywhere a researcher might choose and science is there to test this hypotheses. The fourth way Bournier and Simpson suggests is introspection, which stands for knowledge that is gained from within. Pointing out a list of creativity-associated words such as *innovation*, *incubate*, *initiate* and *invent* to be prefixed with "in" Bournier and Simpson argue that *introspective*, the fourth way of knowing is strongly connected to the notion of creativity. In addition to this, Barret (2007) argues:

Because creative arts research is often motivated by emotional, personal and subjective concerns, it operates not only on the basis of explicit and exact knowledge but also on that tacit knowledge (p. 143).

By using these two arguments as starting points, and referring back to Schön's concept *reflective practice*, I address this fourth type of *introspective* knowing is the inquiry style that enhances my creative practice methodology through influences from action learning without abandoning other types of knowing. It needs to be noted that despite

having an autobiographical approach through reflective practice, this research is not focused on the researcher, but includes the researcher as one of the participants by using experience to analyse work that can be further used by others.

3.6 TRIANGULATION AND METHODS FOR DATA ANALYSIS

In this study, as it is very commonly seen in qualitative research, data analysis methods were not kept separate from the data gathering process.

Because of the wide selection of data gathering methods (participants' feedback, unobtrusive observations, controlled observations, and application of artistic methods to collect reflective data) and the mix-method approach, the generated data needed to be analysed through multiple perspective method. According to Gray and Malins (2004), this type of data analysis requires the acceptance of pluralism and a triangulation in evaluation. Triangulation, a term originally used in geography, gets its name from Gray's method developed on the notion of three perspectives that are that of the student, of the lecturer concerning his own teaching and that of the researcher about learning and teaching. Initially a social sciences methodology for teaching styles in higher art education, this method proposes methodologies that are more visual, interactive and qualitative (Gray & Malins 2004).

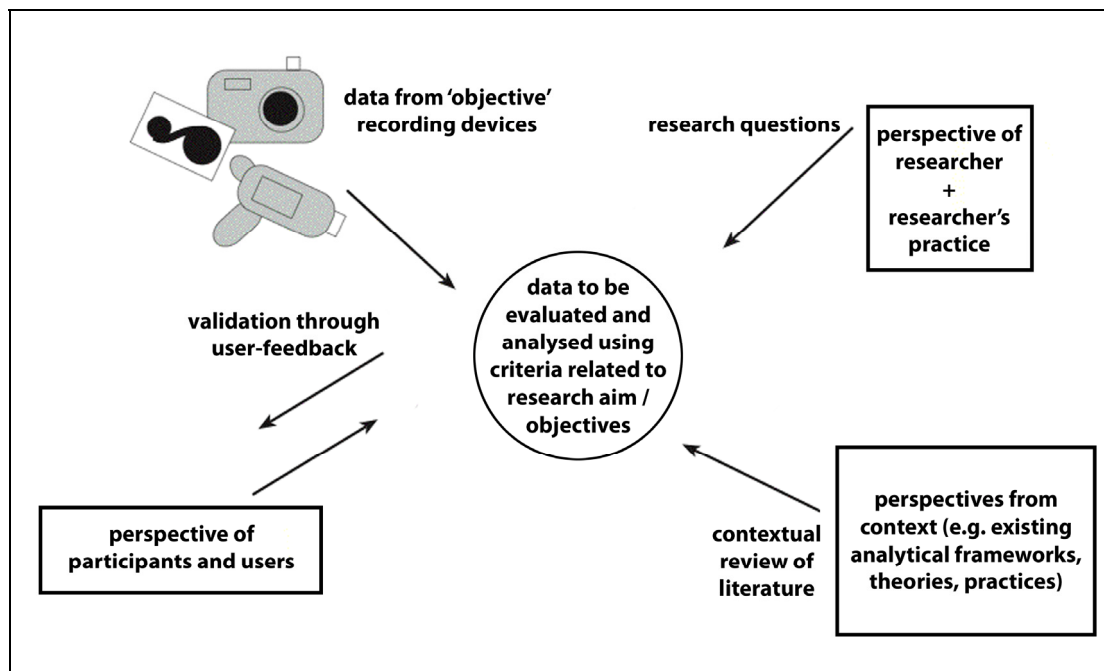


Figure 3-8: Triangulation in analysis and use of multiple perspectives (developed from (Gray and Malins's diagram (2004)

Every step of the practice element of this research was documented with photographs and/or videos in order to reflect on the process and evaluate my research behavior.

Visual images were used in communicating results, too. For instance the professional photographs of individual artworks of Tactual Explorations project were not only supplied as evidence to practice, but also as visual representations of final products. Photographs of visitors engaging with artworks were also used following the same principle. "Traditional conceptions of validity and reliability, which developed out of positivism, are inappropriate for evaluating artistic inquiry" states Leavy (2009, p. 15). Pointing out that visual images can form an effective communication tool with a great potential to "help us see things in new ways", Leavy explains further that this is the major reason why creative researchers resort to using visuals, not only as a medium to represent data but also as to analyse it. She describes the intention behind this as "confronting and challenging stereotypes and the prevailing ideology that normalizes them" (p. 263).

As well as recording my actions within this research, use of visual imagery helped analyzing theories of Tactual Explorations project, through the tests of Haptic Vision and Tangible Images project. I adapted photo elicitation, a common qualitative method, to Haptic Vision and Tangible Images project. The method usually involves use of images in interviews, and relies on the fact that images evoke stronger senses on humans due to a physical basis that the visual processing centre on the brain is evolutionary older than the parts that processes the verbal information (Harper 2002). In this particular project, twelve selected photographs were initially paired with authors to write about haptic stimulus they receive by looking at these images. As described earlier, this response was filtered through a systematic set of instructions that I provided as a creative brief. Their views were added to my views, and as the result of the project I gathered evidence of tactile responses to visual information.

At times, data collected through surveys produced numerical results. These results are presented in tables mainly to show levels of response to questions, as well as to validate numbers of participants. However use of this method does not, in any way, make the inquiry quantitative since the actual data analysis was interpretive and narrative. It was not my intention, at any point during this research, to refer to numbers with their numeric values to generate validity. In a way, surveys were not necessarily used for statistics in this research, but to approve and navigate assumptions.

I wrote this chapter in a linear form where analysis follows data collection. However at times, data collection and analysis actually occurred in a parallel. As Gray and Malins (2004) argue, analysis is never the last stage of the research process as it can occur simultaneously with data gathering. For example, one of the blind participants, Peter, at our visit to the British Museum, after I guided him to the exhibition room from the museum's gate, pointed out to me that walking arm-in-arm with someone who does not have sight teaches me about the conditions of not being able to see. He suggested that this action gives me a better position as a researcher. At the time, my aim was to talk about the exhibit to gather data. However his views helped me analyse my actions then and there. As a result, I started to look for touch in every aspect of my research. I have then become more open to analysis during data collection instead of waiting for the write moment to come for analysing the information. For this reason, this chapter's layout does not necessarily reflect the linear path that research followed. The chapters for individual projects serve a better purpose for seeing the actions in place.

Overall, I view my practice as a system of interactive experience art, regardless of the technology it employs. According to Candy et al. (2006b), there are four distinct types of viewpoints involved in working on interactive art systems. These are: 1) the artist's, 2) the curator's, 3) the researcher's and 4) the audience's point of view. Interpretive data analysis from all three viewpoints was applied to the research as well as to established theories to support these evaluations.

The evaluation took place with two notions in mind. First one is to test hypotheses and the second is to draw capabilities and limitations of the research through these achievements. Both notions arrive to the same academic point which is to achieve valid and reliable results through methodical analysis of collected data. Both the Tactual Explorations artwork creation process and the collecting process of Haptic Vision & Tangible Images project, as well as its call for essays tried to address the following common properties of tangibility¹¹:

- | | | |
|--|-----------------------------------|-------------------------------------|
| <input type="checkbox"/> Vibration | <input type="checkbox"/> Shape | <input type="checkbox"/> Weight |
| <input type="checkbox"/> Surface texture | <input type="checkbox"/> Slope | <input type="checkbox"/> Elasticity |
| <input type="checkbox"/> Surface temperature | <input type="checkbox"/> Hardness | <input type="checkbox"/> Pliability |

¹¹ As described in "McLinden, M. and McCall, S. (2002). Learning through Touch: Supporting Children with Visual Impairment and Additional Difficulties. David Fulton. London"

These properties formed the skeleton of the analysis of these projects also. Applying a comparative analysis, the hidden information was judged against these criteria. In the case of Tactual Explorations, each artwork not only proposed to reflect on one or more of these properties, but also provided an inquiry into the visitor interaction with the completed artworks. The main object of the exhibition was the Haptic Simulation of the Bronze Bust of Sophocles. The other artworks were created to provide the missing elements or enhance the existing ones through physical materials.

Along with reflection and action, comparative analysis also was applied to weighing Tactual Exploration exhibition against two other exhibitions.

On the whole the analysis of the data is reflective and interpretive based on the available evidence (Gray & Malins 2004). All relevant data can be found in the appendices and in the CD provided with this thesis.

3.7 WRITING AS PRACTICE; AS PART OF THE METHODOLOGY

Since the early days of this research, finding my voice has been important; not only for discovering gaps and errors as I write like many doctoral students naturally do; but also to dynamically show how this thesis that I call the artefact of my creative practice research took shape. The biggest challenge was to step aside from traditional academic writing, and become more personal with my authorship and use this authorship to self-distance from the practice in order to form an open-minded critical discourse.

According to Miller (1991), using a voice that is not conventional in academia does not necessarily mean to reject theory. "In my view" she states "the case for personal writing entails the reclaiming of theory: turning theory back on itself". She argues that personal writing requires an "explicitly autobiographical performance within the act of criticism" with an intentional move to self-discovery. By taking Miller's views of personal and autobiographical writing even further, Hallett (1997) states that:

"To write or speak about one's research from a personal and autobiographical standpoint acknowledges and explores the unique relationship between the distinctive background of the researcher on the one hand, and the questions which she or he poses and privileges in the course of scholarly investigation on the other. "

My initial reason to move away from the traditional writing of academia was to be consistent with the 'inclusive' theme of my thesis argument and include myself as the author as well as a participant of this research by making my argument heard. However

there is always a danger of drawing too much personal attention in the act of searching for an active personal voice and at the same time defining oneself as a participant and an author. A fine balance must be found. Therefore I find it necessary to declare what my main intention in this shift towards writing as part of practice is: It is to communicate my subject to its readers by writing out of who I am and therefore not separating the research from its researcher (Wiltshire 1997).

On the other hand, distancing the researcher every once in a while from her writing can add to the advancement of research itself. This creates a re-visit to the past writing, thereby building an active bridge to the past of the research which is a long-term process. "Writing about your past writing is the closest you get to coming back from the dead" says O'Doherty (1999, p. 109). And all mutations involve a certain death according to Irigaray (2008). With the act of conscious and unconscious re-visitation to my past writing I noticed this organic and ever-changing configuration which takes place in most qualitative research projects, that there were layers involved in writing which can be adapted as a method of practice in analysing and collecting data. This realisation took shape as a result of a dialogue that took place between a visual artist and myself, in relation to their art.

The conversation with this artist, Pauline Alexander, started while I was giving software training to her for digitally editing her images for her next exhibition. During this time I became very much impressed by her initial idea of communicating her thoughts to her audience. My early interest in her project had started mainly for the purpose of providing Pauline with the most appropriate service and technical solutions. In order to achieve this, we both agreed that it was very important for me to understand the concept and nature of her project thoroughly. Her proposal for an Arts Council funded project involved creating multi-layered charcoal drawings by leaving traces of the process behind, as if they were breadcrumbs of some form of mental way-finding information to her vision. After encountering a number of discrimination incidents for having a hearing impairment, Pauline faced a mistreatment against the new adjustments in the Disability Discrimination Act (DDA) which became the last straw to her disappointment. This time she decided not to stay quiet and as a result took the employment agency to tribunal for justice. While the case was continuing, she kept coming face to face with some mental images of animal-like faces during her Buddhist meditation/chanting sessions. When she made the connection of these appearances to her tribulation, she decided to draw these images as they appeared to her; and she produced around seventy charcoal drawings of these creatures. Instead of drawing these

on seventy pieces of paper, she draw them all on the same one, by erasing each image after taking a photograph of it, then drawing the next face. For her, the presence of 'traces' left from previous image(s) were very important to the piece, and she wanted to be reminded of the process at all times. The end result was presented as a multimedia project entitled 'The Many Faces of Discrimination' and included series of digital images with audio in order to convert what the artist calls an ugly experience into beauty (Hambrook 2009).

After we finished our training, I found myself still thinking about her project, and finally my admiration for her idea turned itself into an inspiration and I decided to upload her notion of 'leaving traces' as a model to my thesis-writing.

Some of this layering process is also visible in the Literature Review where mainly background to the research is contextually reviewed and presented. For example "The Importance of Touch" section in that chapter first started with the conventional approach that most 'touch' research takes by paying attention to comparison such as whether sight was more important for people or touch. After a period of investigation into past literature I have noticed the common use of this trend and decided to take a step backward and stopped writing about that notion until I tested my hypothesis that reaching democratic assumptions was not a good one for an inclusive project. After the Tactual Explorations project ended I revisited that section and with the practical results of this exhibition I realised that this hierarchy did not matter at all to my research. The feedback and results that this project produced not only had made it clear that an answer to this hierarchal question was not necessary for my research as it would only provide exclusion, but also it was time-consuming in the name of performative research through action. I then decided against including this debate in the discussion and therefore erased all relevant sections just like Pauline Alexander erased her portraits. In order to leave traces of it, I have introduced the idea in the thesis, but then added the fact that this section would discuss the importance of touch 'without setting sensory hierarchies'. Leaving traces might seem natural to any type of writing at the time of revisiting the process; however I believe a conscious and methodological one could enhance the discourse. In other words, seeing the writing as part of practice can be illustrated by reflecting on the practice of writing.

In its general terms on the other hand, writing as part of the research process, or making the written material one of the practice elements of the thesis is not a new idea. Concentrating on how words can have the potential to "function as images", Candlin

(1998) in her PhD thesis argues that academic writing is already a method of practice therefore should not be against practice of art.

Hockey (2003) also points out the importance of writing in practice-based research and how it can become part of creative inquiry. In his research absorbing data from fifty practice-based research students, he arrived at the conclusion that formal analytic writing allows creative researchers to bring exceptionally developed confidence in understanding the visual and functional meanings behind their work and therefore directly supports and enhances their creative work in ways researchers previously could not previously foresee.

It needs to be noted that is not my intention to offer this thesis as an example of creative writing. Also, fiction is not one of the data sources referred in this research. My argument is that the process of writing rather than focusing on the act of writing can help shape reflective practice as part of creative research methodology that is supported by performative and interpretive research. In a way, writing can be considered as part of practice because it ties different aspects of research methodology into one narrative presentation by creating a discourse that is independent from the act of writing. This requires critical distancing. Barrett's (2007) proposition to achieve this critical distancing is to look at Foucault's essay 'What is an Author' and apply the argument in this essay as a model to

... explore how we might move away from art criticism to the notion of a critical discourse of practice-led inquiry that involves viewing the artist as a researcher and the artist/critic as a scholar who comments on the value of the artistic process as the production of knowledge (p. 135) .

Focusing his attention to the relationship between text and its author, Foucault (1979) presents the inquiry of "author function" to introduce author as function rather than the person, while questioning author's position and her disappearance from written work through two notions. The first is the notion of "work" where Foucault asks what a work is and whether or not everything an author writes should be accepted as work. His second concept that preserves author's presence in the text is the notion of "writing". "When rigorously applied" he says, "this notion should allow us not only to circumvent references to author, but also situate his recent absence" (p. 241).

I believe, personal letters of authors published by others after the authors' death can form a good example of Foucault's two notions at the same time. To their readers, this type of published documents can be true works; or they can be considered as betrayal of

and disrespect to the author, depending on the readers' expectations and relationship with author's former published works. Also, this type of publication opens the debate about the notions of *message* and *author's persona* (or both at the same time). For example, Kafka's letters to Milena Jesenská, to me, created a big disappointment as his reader by converting Kafka into a ghost with an ill body, from an author with a creative mind; while Rilke's letters to Franz Xaver Kappus brought a new insight into Rilke's personality as an assertive but kind mentor. Either way, the author's disappearance or reappearance changed the way the work is seen.

Foucault's definition and Barrett's interpretation of the characteristics of "work" is well-developed and broadly intelligent. However, since I do not wish to apply this model fully to the entire thesis, but only partially to writing as practice, nor aim to step out of the boundaries of this research, I decided to limit the definition of work to academic writing where author wishes to make knowledge available to other scholars. I believe Foucault's "author function" argument¹² can still be valid to discourse within this simplified classification of 'work' which I have been attempting to reveal its relevance to this section, as he concludes his argument by asking a very valid question; the same question that he formulated from Beckett's notion in the beginning of the essay: "What difference does it make who is speaking? " (Foucault 1979, p. 253).

Foucault's author-function is only partially applied because his approach to *self* does not allow much room for subjective thinking or criticism which is vital to creative practice research and/or action research. While leaving traces of this thinking, I would prefer to keep the autobiographical style with the first person pronoun as the narrator of this written work. As explained earlier in this section, this is to convey reflective actions that took place throughout the practice elements of the research. Barret (2007) also points out this limitation in Foucault's model when applied fully to research through practice, and proposes Donna Haraway's (1988) feminist-objectivity notion of "situated knowledge" to close the gaps to arrive at a better model for writing for practice-related research. Haraway idealises an objectivity that gives place even to paradoxical science projects born out of feminism, without separating subject from object. Therefore the individual does not get separated from the experience. What this means is that there is no hierarchal race between individual and the experience, but

¹² The discussion also involves questioning the role of author's name in disappearance / existence of author in her works. I will not go too deeply into this notion and treat as included within as part of the author's function.

together they enhance the discourse (Haraway 1991). "Inscription results in displacement of experience in favour of representation and discourse" states Barret (2007, p.144))and argues that Haraway's approach provides a more rational guide in bringing back the self to the research, and folding the researcher's experience back into the creative process of inquiry.

In conclusion, rather than applying set-in-stone theories as full models to any part of writing process, I take guidance from questions of scholars in order to locate myself as an author within the text which ideally becomes the independent discourse, without losing my search in reflection. In other words, the creative model applied to writing this particular creative practice research, is the combination of asking Foucault's questions and following Haraway's theories to support my experience as a practitioner and search of self as an author-researcher. After all, as Irigaray (2008) states "it is important to remain faithful to one's own journey. Otherwise no perspective on the encounter will be possible, and its becoming will prove to be impossible" (p. 33)

3.8 SUMMARY OF THE CHAPTER

With this chapter I presented my methodological approach to realising my thesis objectives and argued how creative research methodology is appropriate as a bricolage of methods. Within this bricolage, I introduced my roles and actions, and illustrated the relationship between these roles and actions by drawing examples from my practice as well as using tables and diagrams. I have not invented new methodologies; however the collective application of my methods formed a new way of presenting the methodologies mentioned in this chapter, and I declared this process as the 'practice of touch'. This declaration is not only because this research is about seeking the missing tactile information on an untouchable object, but also due to recognising the value of the touch sense and the continuity of the human element in the process of 'making'. Within this chapter, I also dedicated a section to clarifying the similarities and differences, as well as common uses, of practice-based and practice-led research. This section is vital to the study in order to pin-point how my research sits within the boundaries of the two, and how it has to eliminate misconceptions within the field in order to realise this position.

In addition to addressing my practice as being realised within four projects, I also declared my writing as practice and how I cherished its traces from previous drafts, depending on the section and work being discussed. I realised the process by adapting a visual artist's method as a model for writing, where her technique involves

drawing/erasing layers onto same paper over and over and leaving traces behind after erasing each time to be able to draw again. What I have found out from application of this technique is that, although it is a messy way of working, it exercises the mind that research is an organism and as a researcher you have to sometimes let go of the process. When applied to writing, this process feeds the artistic development of the research, and the academic development of the bricoleur. This led me to see my writing as a journey and with the aid of Foucault's author-function concept I learned to see experience behind my actions as the author of the process (not the persona of an individual, but the 'voice' of a narrator/researcher). I tried to illustrate the relationship between my actions and methods realised first through a simple diagram earlier in the thesis, and later on within a more developed table to include how the research was realised and what were my influences. This table is placed at the end of this chapter as it summarise the methodology in relation to my practice.

After this clarification of roles and methods, it is now appropriate to move to the projects and report their conclusions. This will be done with the next two chapters, before progressing to the Critical Discussion & Analysis of the thesis and its concepts, rather briefly but firmly as a whole.

Section of the Thesis	What was its Epistemological influences?	General methodology applied	Methods used	How was the research conducted?			What was the focus of the investigation?		
				Into	For	Through	People	Process	Product
User-feedback exercise	<ul style="list-style-type: none"> Participatory action research 	<ul style="list-style-type: none"> Performative 	<ul style="list-style-type: none"> Controlled observations Reflective Practice Interviews 			✓	✓		
Tactual Explorations exhibition	<ul style="list-style-type: none"> Participatory action research Design as research 	<ul style="list-style-type: none"> Performative Interpretive 	<ul style="list-style-type: none"> Information design Reflective practice Interviews Unobtrusive observations 	✓	✓	✓	✓	✓	✓
Tactual Explorations workshops	<ul style="list-style-type: none"> Participatory action research 	<ul style="list-style-type: none"> Performative 	<ul style="list-style-type: none"> Unobtrusive observations Questionnaires / Interviews 			✓	✓	✓	
Tactual Explorations event management	<ul style="list-style-type: none"> Participatory action research 	<ul style="list-style-type: none"> Performative 	<ul style="list-style-type: none"> Curatorial Information Design 		✓	✓	✓	✓	✓
Exhibition visits	<ul style="list-style-type: none"> Participatory action research 	<ul style="list-style-type: none"> Performative Interpretive 	<ul style="list-style-type: none"> Exploratory Reflective Practice 			✓	✓	✓	✓
Haptic Vision & Tangible Images project	<ul style="list-style-type: none"> Participatory action research 	<ul style="list-style-type: none"> Performative Interpretive 	<ul style="list-style-type: none"> Curatorial Critical design Visual analysis Reflective practice 	✓		✓	✓		✓
Touching the Bronze Bust of Sophocles	<ul style="list-style-type: none"> Participatory action research 	<ul style="list-style-type: none"> Performative Interpretive 	<ul style="list-style-type: none"> Reflective practice Visual Analysis Conversational 		✓	✓	✓	✓	✓

Table 3-2: Summary of my methodologies. Table developed from Yee's model for PhD Examples Summary (Yee 2009)

CHAPTER 4: Tactual Explorations Project (Practice)

Overview

The development and implementation of Tactual Explorations project is the most fundamental part of this research. Whilst introducing Tactual Explorations as a concept, in this section of the thesis I will concurrently describe and analyse the performance of its implementation, a research-based inclusive public event that took place in Huddersfield between 29 September and 8 October 2006. Because this is the largest practice element of this thesis and it changed the direction of the research a great deal, this project is given its own chapter and presented before the other smaller practice elements of the research. Chronologically in the research this actually is the second project; the first being the User-feedback exercise described on the next chapter.

The event included workshops, talks and a tactile exhibition focusing on one museum object. At this event, the selected object, the Bronze Bust of Sophocles from the British Museum's Greek and Roman Antiquities collection, was represented tactually by me and nine other selected artists, through one haptic simulation and supporting artworks to enhance the physical information.

4.1 'TACTUAL EXPLORATIONS' AS TACTILE INTERPRETATION

I developed Tactual Explorations to be the main practice element of this research in order to answer to the following questions:

- ☐ Can we enhance access to the interpretation of an untouchable museum object by representing its tactile properties; and,
- ☐ Can we present this information as a tactile interface for museum visitors (especially visually impaired visitors) through a tactile exhibition using physical artworks to complement haptic simulation?

Within these questions, there are some secondary areas highlighted with further questions. These sit within the following questions:

- ☐ Can tactile artworks enhance the “haptic” simulation by replacing the missing physical/ tactile properties?
- ☐ Can a tactile interpretation of a precious exhibit in bigger museums be a way to bring the museum object to visitors living away from this museum? Can this hands-on approach be better than a virtual museum that can be reached online?
- ☐ How can the main and hidden aspects of “touch” in an object that is exhibited visually be explored by visitors who has never seen (or touched) the original museum object before.

By rephrasing my research questions, the concept can be defined as ‘a museum-based public event that focuses on an individual museum object in the form of a tactile interpretation for this object through virtual and physical works created by various artists’. These works would not be just simply inspired by, but would be directly based on the selected object’s tactile properties. The said museum object was decided to be one behind a glass case, and the touching of which was prohibited to all visitors, including visually impaired ones. This is necessary for staying loyal to the originality of this research and also to get realistic¹ data.

The implementation of this idea took place at the Northlight Gallery in Huddersfield after ten months of preparation. The preparation stages are also realised as part of my practice. The event included relevant workshops, talks and a tactile exhibition that interpreted the Bronze Bust of Sophocles from the British Museum’s Greek and Roman Antiquities collection. Ten commissioned artists represented this selected museum

¹ Not through controlled research groups or staged circumstances.

object tactually with one haptic simulation and 12 supporting artworks to enhance the physical information available to the viewer (Figure 4-1 & Table 4-2).

Even though Tactual Explorations emphasizes touch as a main sense, the tactile exhibition of Tactual Explorations was not designed be a touch-only experience. All exhibits could also work as stand-alone visual artworks although vision alone did not define any of them. Visitors at all times were invited and encouraged to bring other senses into their experience to establish a multi-sensory interaction (Figure 4-2).

Results of previous user-feedback-exercises indicated that the addition of tactile feedback as a separate interface tool to a visual display can enhance the learning experience and increase the accuracy of tactual perception, while the freedom of movement and the use of a tactile interface can create the illusion of one-to-one interaction with the original precious museum object. These exercises, however, were limited in away that they did not provide enough variety to test how inclusive and accessible an exhibit could be. In order to collect the necessary data for the research, it became crucial to create a public event that was set in real-life conditions. More precisely, a museum object was needed that could be examined by random visitors, (not necessarily with the questions of this research in mind), if realistic outcomes were to be achieved.



Figure 4-1: Tactual Explorations Exhibition at the Northlight Gallery



Figure 4-2: Visitors examining Lynn Cox's artwork 'The Wiry Old Man'



Figure 4-3: A young visitor examining Deborah Gardner's wax artwork 'Viscid Head'

In order to fulfill the requirements of an inclusive project from broad points of view, it was important to create an event that was useful to people, not just to my research. The project proposal, funding and sponsorship applications, call for volunteers for different roles; the artist brief and the publicity materials were all produced with inclusivity aspects in mind. Curation of the exhibition involved a great deal of attention to the accessible materials (Figure 4-3) Commissioned artists were selected according to their research background, use of accessibility as concept and practice in their previous work and their approach to the artist brief on their submitted proposals.

4.2 BACKGROUND WORK AND PROJECT MANAGEMENT

The preparation and making of the event took just over ten months. It would be irrelevant to define every step taken to realise this project; nonetheless the significant stages up to the point of exhibition's opening to general public, especially my individual work and labour relevant to the roles that define my practice² is summarised in this section. Some elements mentioned here such as individual artworks, the selected museum object, workshops etc. are further discussed in this chapter. Any document that is seen as relevant or important in this section is included in the appendices.

Preparation process

As a first action, I prepared a draft proposal to address the concept and how artist's input was necessary to realise this project. This initial proposal was used as an aid to convey the idea to colleagues and supervisors for gaining feedback and developing the project further.

Soon after talking to several people at my department for their suggestions and feedback, I commenced work on background research, as well as any potential formalities pertaining to the preparation of a public event, such as art commissioning, publicity, health and safety etc. At this stage I consulted with the University of Huddersfield legal officer too, concerning the necessary legal documents and Intellectual Property matters. Upon having the particulars of the project, this officer prepared the initial contracts and Intellectual Property disclaimers; one to be included in the brief as a disclaimer and the other to be signed and returned by the selected artists just before any physical work commenced. This was not only to protect the project, but also to create an agreement between artists and myself for time-

² Please see page 77 of *Methodology & Methods* chapter where I explain my approach to practice.

management as well as for artists to commit to their initial proposals that I chose from many others for their suitability to the project.

After several visits to major museums in London, I selected a museum object from the British Museum (the Bronze Bust of Sophocles) as the focus of the project. After this section in this chapter, further information will be given about this object. This selection was followed by further visits to the British Museum, as the selection of this object required revisiting the museum at different days and hours to unobtrusively observe visitors with this object (

Figure 4-4). During these initial visits, I informed a member of the museum staff or a gallery attendant, as well as visitors in the room, of the research-nature of my visits. Through emails, and conversations at the time of visits, with British Museum representatives, I discussed copyright issues for using images. For non-commercial purposes the museum allows photographs of objects to be taken freely, as long as tripods are not used³. Visitors did not have any objection to being observed during their visits to this gallery.

Two meetings and a number of email conversations with experts and curators from the Department of Greek and Roman Antiquities of the British Museum took place throughout the preparation process. Dr Peter Higgs, curator of Greek and Roman Antiquities department gave me general information for the object's history and its placement in the gallery. He reminded that, occasionally but rarely, this exhibit is lent to other museums and galleries, although room 22 (known as the World of Alexander) is its regular location in the museum. The bust has always been at the museum on all of my visits.

The next main step was to select the venue of the event. I decided to find the venue before releasing the artist brief to the artists, so not only I could then let artists know of the venue before they submitted any proposals to me, but also I could design the use of gallery space as the artworks developed. In other words, the venue was very important to the development stages of the research in terms of controlling the layout for

³ At the time of publishing the results of this project in a book, I contacted the British Museum professionals again for permission to use the photographs that I took in the gallery. Because they did not have a suitable photograph of this object to replace my photographs, they agreed to give permission for my photograph to be published both in my thesis and the book.

accessibility, and it would also allow me to curate for the space rather than looking for a space after the artworks were created. I selected the venue after conducting a



Figure 4-4: A visitor with my selected object at the British Museum

background research and visits to several galleries including the gallery space in the Kirklees Town Hall. This was followed by meetings and correspondence with gallery managers. My main criteria for the venue selection was that the venue had to have a large gallery setting in order to allow enough space between exhibits for disabled access. This was not only for wheelchair users but also for visitors with guide dogs, and people with assistants, as well as groups of people to walk around together if they wished. Another important requirement was having studio facilities and separate rooms for workshops to take place. Also, I wanted a reasonably remote venue that was not identified with contemporary technology-based exhibitions; and perhaps would be associated with more traditional art forms and local artists/visitors. The reason behind this was to introduce something new in an unexpected setting to enhance the inclusivity of the exhibition. In other words, with this approach, not only an interpretation from a major museum would come to a completely immaterial location, but the event would also provide an unconventional combination of materials and

technology to a least expected setting therefore make it available to random visitors and become less exclusive. The Northlight Gallery on the outskirts of Huddersfield was perfect for the purposes of this project. Its location was appropriate, it had visitor list composed of people from a wide variety of backgrounds, good relationships with local art lovers, and it provided the necessary space within the gallery. It also had additional accessible rooms and studios for workshops and talks to take place simultaneously.

Once the venue and provisional dates were established, I contacted the Kirklees Council and the Huddersfield Society for the Blind to introduce the idea. They agreed to publicise the event, and also send out any press release or documentation to their members. At this stage I also developed the draft project proposal further to better outline the objectives of the project. This proposal was necessary for funding applications mainly; furthermore it helped shaping the artist brief.

Around this time in the project, I announced calls for artists on several art-related portals as well as different kinds of institutions to be able to reach artists from diverse backgrounds. These organisations included Arts Council UK, RNIB (Royal National Institute of Blind People), Diorama Arts Centre and Artquest. Because I was also going to create some of the artworks myself as one of the artists of the exhibition, my curation and selection process had to be open to everyone in order to take the project out of my domain and instead to offer an inclusive application procedure. Placing such calls also helped me initiate a dialog with other scholars who wanted to be informed of the project or take part.

During the preparation process, I paid special attention to finalizing the artist brief to draw guidelines and instruct the artists. This brief clearly established the criteria for the making of artworks, and introduced the project further. The brief showed the working title of the project as 'Tactual Explorations: Sophocles' which then simply changed to Tactual Explorations. After a brief introduction to my PhD research and how this exhibition would be related to it, I gave some information on this document about the selected museum object, and then set out the required criteria for artwork creation and preparation. It was not my intention to limit artistic approaches but to have all work produced methodically and appropriately to this project's aims, which mainly was about physically exploring the tactile information on the surface of this object. As well as stating the main objectives, I had to give some specific requirements concerning the artworks dimensions and materials. The artworks could not be larger than 150 cm in any direction. The reason behind this was to provide a greater access to exhibits and

even allow wheelchair access around each exhibit, and between walls and the other objects. I asked artists to consider the physical possibilities for the visitor when deciding on the scale of works. Although the proposals were to be written with the selected bronze bust in mind, I did not limit the material of the artwork to the actual material of this object. The artist could freely experiment with other materials to represent the texture properties of the original object. Artists were invited to take inspiration from varied sources that could truly represent the tactile properties of the selected museum object. However, I stated in the document that it was very important to create artworks that were safe to touch. For this reason, I sought experienced artists that were familiar with their proposed materials. The full artist brief can be found in the appendices.

After receiving over one hundred and fifty CVs and expressions of interest to my calls for artists, and subsequent email and telephone conversations with some of the applicants, I sent out the artist brief along with the legal documentation only to those who wanted to take part by creating a new commissioned work that would be part of a research project, instead of submitting existing work from their collection. In the end, I received thirty complete proposals that were suitable. From these proposals, I carefully selected ten artists according to their proposals, skills and research interests, following correspondence and physical interviews with the shortlisted ones.

To be able to achieve as much of the objectives as possible, it was necessary to seek external and internal funding. For this reason I submitted two separate grant applications to the University of Huddersfield on subsequent years. One was just before the project preparation started, and one was after the project got the go-ahead. After being successful in being awarded this funding, the first grant was used to purchase the haptic device and the other was to cover six of the artists' fees and to purchase the replica of the Bronze Bust of Sophocles in order to study some of its surface information in detail, and let the artists have access to this information by sight or touch according to their proposal.

Initially I only had enough monies to fund five artists, fortunately later on I was able to extend this number to six funded artists. I planned that the remaining artists should join if further funding became available. However, when I mentioned this issue to those artists, they wanted to take part without waiting for the funding decision and decided to self-fund if necessary as they were very interested in the project and they could make academic or professional use of these artworks that were born out of a research project by presenting their approach at other events after the Tactual Explorations was

complete. This was a big commitment on their part as the project schedule required for these artists to travel to West Yorkshire from London, and stay for at least one night in order to attend the artist discussion on the day following the private view. As soon as the artists were selected and their confidential agreement documents were exchanged, I was able to commence what can be referred as the 'making' stages of the project.

Process for making

As the first step to this stage, I arranged individual meetings with artists. In order to introduce the artists to each other and create awareness of our individual projects, I also initiated some online group communications. Two people, one from the exhibition (Lynn Cox) and the other who is one of the workshop facilitators (Caglar Kimyoncu) agreed to be the accessibility advisors to the event. They were consulted before making vital decisions that involved the safety and comfort of visitors with physical and visual impairments. Both advisors had strong experience in giving consultation to museums and disability organisations in the UK.

In the early days of creation process of the project, I spent some time photographing the texture information on the Sophocles Bust in order to send to the artists. Depending on the nature of the proposed artwork or their personal needs, some artists had the opportunity to examine the replica bust by touch. For example in the case of Deborah's work, *The Viscid Head*, it was important to create a 3D sculpture with the aid of photographs only, whereas Lynn wanted to get as much description as possible about the object before creating her work *The Wiry Old Man*, went to the museum to understand the spatial information of the original, but wanted to study the replica to gain some sense of its texture and dimensions due to her visual impairment. My need for these photographic images also came at the time of observing Lynn examining the replica for the research stages of her work. She was not entirely sure if some of those bumps on the surface of the bust were intentional or whether they were faults; and at times she missed them and had to look for them on the surface again. Because her work was about creating the contour of the bust, these details were very important for her. She reminded me that direct representation of visual elements cannot always be the most useful way of representing them to the blind people. She added that some information might need enhancement, same as tactile images that are created especially for the visually impaired people. I took these comments on board, and decided to enhance some of the shadows formed around the eye area as well as the lightest bumps on the face to make them more tactile for fingertips. My technique was engraving the negatives taken from the photographs of the highlights onto a brass plaque. This piece,

Surface, also relied on the photographic images, with the exception of seeking the negative details.

To increase funding or to be able to use the available funding more efficiently I approached a number of organisations and university departments as sponsors. For example, as a result of some of these communications, the Metropolitan Works, which is formed as part of the London Metropolitan University, accepted to carry out the 3D laser scan of the replica free of charge, and use the Tactual Explorations as a case study for their own research in return. For the actual day of scanning the bust of Sophocles, they invited some of their clients and academic members of the Metropolitan University to attend and observe the session as well as discuss possibilities with the technologies available. With this workshop, the Faro team was able to introduce their newest scanner available at the time in real time, the Metropolitan Works employees had a chance to communicate with their clients directly using the Sophocles as an example, and I had the opportunity to operate a scanner for the first time. Later on in the week, I had to go back to Metropolitan works to get further scans of the object in order to achieve a faultless one specifically for the haptic simulation. Around the same time as the Tactual Explorations event, the Metropolitan Works was given the cover story on the current issue of the Creative Review magazine at the time, promoting the services they provide and the emerging technologies they are in touch with. In this article, they also covered my research and how their technologies were applied to it.

Another cost-effective solution the project came in the form of services for web programming and development. A newly-formed web design company agreed to build an accessible website with a user-friendly client management system without a fee in order to develop their portfolio offering accessible fully tested websites to non-profit sector. After I designed the site, this company built it according to the web accessibility requirements; they then tested and cleared the code for any conflicts with access devices such as screen readers that visually impaired people use quite often.

Kirklees Recorder, a council-funded audio newspaper for visually impaired people in the area, has recorded the details of the exhibition in order to include and announce throughout September as promised in the early stages of the project. Towards the launch date of the project, they also recorded the Audio Guide of the exhibition that I previously wrote, to be available in different formats and on various platforms. I kept the information on this audio guide to be optional and visitors could jump from sections to section depending on the device they were using. At the time, I was advised

by our accessibility consultant⁴ to also make some old style walkmans that play tapes available, as some of the visually impaired or elderly visitors find these a lot easier to use than their higher-technology successors. She also recommended providing a few personal CD players as not everyone would feel comfortable with the audio point in the exhibition area, and they might not have a personal mp3 player themselves. For this reason, a couple of months in advance, I placed an ad on the Freecycle London website to ask some portable personal tape and CD players, as well as good quality headphones in perfect working condition to be able to provide at the exhibition. Within a couple of weeks, I received so many of them in the post. I took some of these and placed Braille labeling as recommended and prepared by our consultant, and took the rest to a charity shop so they could be used by others.

To be able to promote the event and reach a wider audience, I designed identity and publicity material including flyers, posters, event program and later on an invitation for the private view. It was also necessary to write and send out a press release. I had never written a press release before, and certainly did not know who to send it to, therefore I spent some time researching how to appeal to the right audience with an appropriate press release. Once I prepared this, I sent it to a several publications and organisations including local newspapers and colleagues in the industry for press coverage and publicity. I wanted to follow this procedure not for commercial reasons as the project was a non-profit event, but to create awareness and promote the artists. As mentioned earlier in the thesis, the concept of inclusivity was not only limited to the design process but also was about making this project useful for as many people as possible.

After looking at the opportunities to promote the event, I started to focus on creating the workshop program and how they could be organised in terms of content and also how they would be relevant to the event. The main objective behind giving workshops alongside the exhibition was to open up the concept of touch to the visitors and give them a chance to explore this sense at different settings and situations such as drawing or story-telling by touch. Another important reason for these workshops was to engage the visitors with some of the materials and techniques used on the artwork creation in order to convey the reasons behind selecting these materials to represent the surface information on the selected object.

⁴ As well as being one of the artists and workshop facilitators at the exhibition, Lynn Cox agreed also to be one of the advisors of the project on accessibility regulations and preparing material for visually impaired visitors. Lynn Cox has been acting as a consultant to major museums and galleries in the UK.

Around midway through the process of making the exhibition, I established the need for an experienced haptic programmer to guide me in the making of the haptic simulation. I placed a call for a haptic programmer on several industry-related websites. I selected a programmer from the University of Reading and he provided the project with the haptic programming. This was not collaboration in any sense, however his research work which involved multi-finger haptic controlling was truly inspiring and his approach to use of haptic devices certainly affected my thoughts for the future of Haptics. At their research lab, I had the chance to see my model of Sophocles placed in this multi-finger simulation where the model could be grabbed and lifted with a more realistic hand action. Seeing the model both in this system and in my setup gave me the understanding of potential possibilities for the future in order to improve the project further. For instance, if a smaller size museum object is re-interpreted using the Tactual Explorations format, multi-finger Haptics could be more appropriate than Phantom Omni that I use for the haptic simulation, as the multi-finger option simulates the grabbing action, rather than only feeling the contour and surface of the object only. Seeing this system also confirmed that I did not need any other device to realise the Tactual Explorations project as none of the haptic devices available at the time provided the missing tactile properties of haptic simulations that the Tactual Explorations project addressed.



Figure 4-5: Testing 3D model of sSophocles on multi-finger Haptics, courtesy of Alastair Barrow at the Interactive Systems Research Group, University of Reading

Once the project progressed further I was able to better estimate the workload involved and therefore confirmed the dates of the event formally. I announced it to and through several organisations and local government websites; these included Royal National Institute of the Blind, Art Through Touch. National Disability Arts Forum, and Kirklees

Council. Other stages that took place in order to finalise the work and open the event to public are as follows:

- ❑ I documented the stages of the artworks and stayed in dialogue with the other artists, while I was developing my own artworks for the exhibition, as well as project managing and producing other material. I designed and printed informative 'work in progress' booklet. The booklet introduced the project's concept, included essays and further information about the artists, artworks and the workshops.
- ❑ After an extensive search (mainly due to small budget), I found other cost-effective ways to enhance access to the exhibition. The Braille version of the booklet was voluntarily prepared in a kind gesture by E&O Braille Transcription Services, London. We made some copies available at the reception, and some to be taken away by the visitors. The content was same as the work in progress booklet mentioned above, without the pictures.
- ❑ When the funding almost run out, I created a website page capable of accepting online donations, in order to seek further funding from friends, family and the contacts gained throughout the development process for fundraising. This funding was vital for achieving steps such as adding more workshops (six in total) to the project, providing for the volunteers expenses and paying for unforeseen extras. Later on after the project, I sent out a document listing all donations and what they were spent on to all sponsors.
- ❑ I purchased a domain name and hosting for the event; and the accessible website mentioned above (www.tactual.org.uk) was developed.
- ❑ I contacted "The Out There" section of the University of Huddersfield for arranging volunteers to provide help for various jobs, and they agreed to announce a university-wide call to students to do work experience for different roles. I created a rota for students according to what they wish to gain from this experience (i.e. some wanted to work as workshop assistants to observe the techniques, whereas others preferred being gallery attendants to have one-to-one interaction with visitors). All roles were carefully drawn, and discussed individually with the students. Work experience students who chose the exhibition as their case study of their major project were given a separate introductory Q&A session and a tour for them to document the process.

- ❑ I developed the exhibition floor-plan further according to changes, and allocated all artworks with their individual necessary space and a plinth that is suitable in height and durability, for inclusive access.
- ❑ I allocated workshop places to potential attendees and arranged the rooms that were booked within the gallery. Also group visits were arranged in advance with special-needs schools, and time slots for tours were given to those who booked to see the exhibition in advance.
- ❑ With the help of a friend who agreed to assist me, I collected the artworks for the exhibition from all of the London-based artists and the same friend and myself drove everything to Huddersfield from London.
- ❑ Once I got the final confirmation from artists about attendance, I planned the organisation of the artist talk. This took place on the first morning of the exhibition, after the private view; and before the exhibition was opened to general public. The talk was filmed; all artists attended.

The processes of development and the making of the project is realised as part of the practice. Similarly, the documentation of the process and communication with the artists, as well as defining the artworks are also contained within this practice. Before presenting the individual artworks, it would be useful to introduce the selected museum object in order to give a background to it and its selection process. The next section will provide this introduction.

4.3 SELECTED MUSEUM OBJECT: BRONZE BUST OF SOPHOCLES

The Bronze Bust of Sophocles is not only the selected piece for the Tactual Explorations exhibition but it is also the object that this thesis focuses on. The bust is currently displayed in room 22 of the Greek and Roman Antiquities section of the British Museum (Figure 4-6), and on occasion is lent to other museums or galleries. The variation of the spelling (even in different British Museum publications) changes between Sophokles, and Sophocles; and it is sometimes possible to find resources under the Sofokles spelling. The museum also refers to this bronze bust as 'The Arundel Head' because of its previous owner being the Earl of Arundel. Although its true origins are unknown, the bust used to be known as the 'Arundel Homer' but more recently has been thought to be the head part of a statue of the Athenian poet and tragedian Sophocles (Harding 2008). This Hellenistic statue is made in a realistic human-scale and

its height is 29.5 cm. Although Sophocles is from the fifth century BC, this statue is believed to be a second-century copy of an earlier statue. The bust was brought to England from Constantinople (now Istanbul) for the Arundel Collection in the early seventeenth century. Later on the bust became the property of English Physician Dr Richard Mead (1673-1754), and after that it belonged to the ninth Earl of Exeter Brownlow Cecil who presented it to the British Museum in 1760 (Burn 1991). The British Museum describes the bust as:

Bronze head from a statue, perhaps of Sophocles. This head represents a man of middle age, with a thick beard, slightly thinning hair and a severe expression, enhanced by a deeply wrinkled brow. His hair is bound by a rolled band, like a diadem of a type usually associated with Hellenistic rulers, rather than philosophers or playwrights. The body types for statues of famous intellectuals are generally semi-draped, with perhaps only the chest bared. Both the body and the face usually exhibit signs of age (2011).

This description is also placed on the bust's stand inside the glass case, and happens to be the only information available to public at the time of visiting the museum. This exhibit currently does not appear in the British Museum's audio guide either. Because the surface is too delicate to be handled regularly and original Greek bronze works on a large scale are quite rare, the bust needs to be displayed in a glass case and touching is strictly forbidden⁵. These restrictions and the amount of surface detail available, make this exhibit a perfect object for the Tactual Explorations project though of course, it was necessary to purchase a replica of the bust to use at the exhibition and for the artists to physically examine (Figure 4-7).

4.4 FINAL ARTWORKS AND THEIR MAKING

For the exhibition, each artist created an artwork or set of individual pieces to represent their chosen tactile information from the surface of Sophocles's bust according to the guidelines given on the artist brief. Each piece was designed to be explored mainly (but not only) by touch, by paying particular attention to accessibility. On the whole, the exhibition (as an interpretation of a museum object) was to demonstrate how one museum piece could be explored tactually and what elements of tactile perception could be represented by using a variety of materials. One of the objectives was to achieve a tactile setting where each piece of the exhibition would speak for itself as an

⁵ This information was gained from the British Museum's Greek and Roman Antiquities section via personal communication



Figure 4-6: Bronze Bust of Sophocles at the British Museum

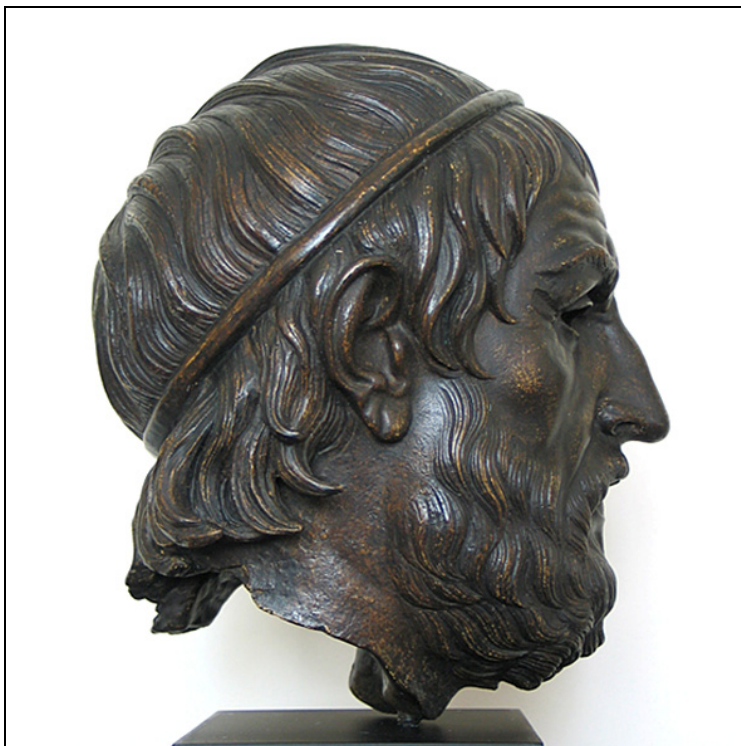


Figure 4-7: Replica bust of the Bronze Bust of Sophocles

artwork, however when presented together in the exhibition room, they would form the distinctive pieces of one big tactile representation of one museum object. Because the main aim was to explore the tactile information of a selected object through the artists' representation of the tactile information, the artwork production techniques were not limited to the object's own. As a general rule of the Tactual Explorations concept, the artists were free to explore different materials in order to achieve the correct effect of their given/chosen interpretation of the tactile properties. Artists could focus on a detail taken from the original piece, or represent the whole piece, in order to form the complete haptic experience they had in mind. Each artwork focused on one or more of the following properties acting as the main feature of the artwork: vibration, surface texture, wetness/dryness, surface temperature, shape, slope, curved, hardness/softness, weight, elasticity, and pliability. These pieces of sensory information were categorised similarly to the list created by McLinden & McCall (2002) showing a table of examples which was adapted from the earlier works of Heller & Schiff (1991) and Pagliano (1999). Table 4-1 shows my adaptation of this information as a table. In addition to investigating the surface information of the bust, the tactile properties implemented within the artworks were planned to supplement the force-feedback of the haptic simulation (which only provides shape information) by adding any missing tactile feedback in order to form a collective set of information about surface texture and material properties.

The sensation of touch was not limited to hands. One of the artists, Murat Ozkasim noticed this on the artist brief and decided to create an artwork that would encourage visitors to go one step further. Adopting a tongue-in-cheek approach to Sophocles's form, Murat created edible replicas of this sculpture in order to represent an important but often neglected way to identify an object's shape, using the tactile receptors of the human tongue. To produce the casting of the chocolate sculptures, Murat first created a 6.5 cm high replica using a rapid prototyping method. 'WOW Academy' of Bradford supplied this technology as one of the sponsors of the event. Chocolate replicas were handed out to some visitors on the evening of the private view. What Murat found most fascinating, as an artist,, with this production was to be able to receive the description of Bronze Bust of Sophocles in 3D data form via email, and observe this data to be printed into a small-scale replica version of this sculpture the original of which he has never seen before..

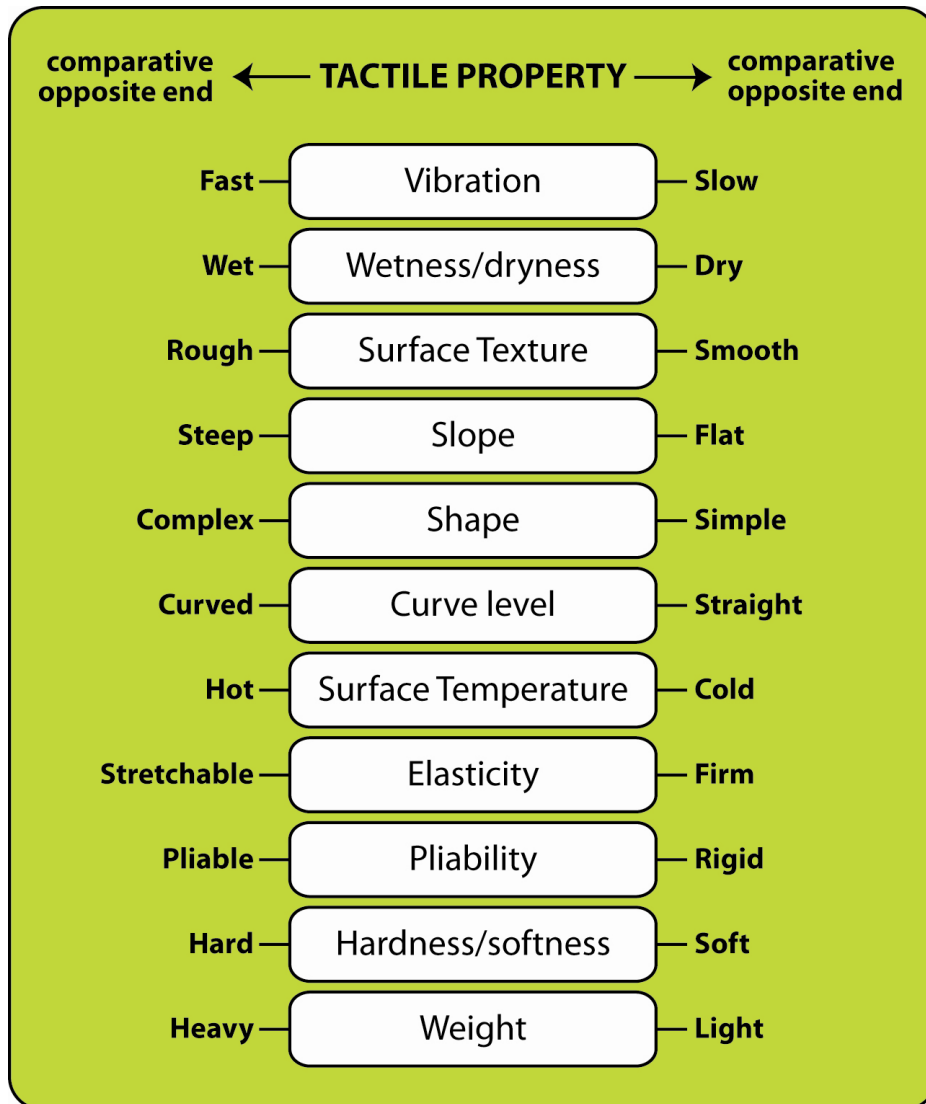


Table 4-1: Categorisation of tactile properties, adapted from MyLinden & McCall's table (2002)

Deborah Gardner's 'Viscid Head' was a deliberate attempt to exaggerate, not only in scale but also in any other tactile aspects such as material and contour information. Deborah wanted visitors to almost become part of the information-gathering by inducing them to walk around the object and form some immediacy with the object. The original object is small enough to be able to examine on the same spot. By making the visitor walk around this giant version of the statue, she makes them first question their sense of scale by making them lose and re-gain the sense of their own bodies. About use of her choice of material she says:

"The wax that i used makes further reference to the body... to a 'live' material that oscillates between the fluid and solid. Often the surface of my

sculptures is analogous to skin, to be able to touch that surface as well as visually perceive it was a natural progression to the experience, particularly when the surface has a fat/flesh like quality when touched. The material presence of sculpture, its scale its placement as an object within space can often speak about our own sense of embodiment and our understanding of that object can invite an intense desire to touch. ..”

Deborah kept this wax artwork a pure white in colour to add to some form of illusion in order to give another task of engagement to the visitor. Her idea was to make this work appear to be in marble when looked at from a distance, but once approached the material started to reveal itself, and touch confirmed the material in the end. My additional reason for finding this idea useful is that engagement with this particular material simply opens an inquiry about the original’s material qualities, especially of its temperature. Visitor then looks at the other objects in the room to seek this missing information, which adds to the collective information principle behind this multi-object interface.

The booklet introducing the event and its work in progress, which was handed out to all visitors at the exhibition, is also available in the Appendices section. This booklet contains artists’ biographies, and shows photographs from the production stages. Replacing the conventional glossy exhibition catalogue which usually is about the finished work, this booklet gives the visitor access to the background of the project with raw material also.

Table 4-2 shows the list of commissioned artists for this project, and lists their artwork with their details. The pages following that display the individual artworks with their description.

Artist Name	Artwork Title(s)	Materials & Dimensions
Tom Ainsworth	Expression	Cast silicone, black pigment, and metal- 14cm x 10cm x 2cm
	Hair	Cast silicone, black pigment, metal and hair 14cm x 10cm x 2cm
Carolyn Alexander	Unravelled	Latex 67cm x 11cm x 9cm
Louise Atkinson	Hairball	Hair, hessian, cotton and stuffing 70cms in diameter (approx)
Lynn Cox	The Wiry Old Man	Wire 30cm x 30 cm
Deborah Gardner	Viscid Head	Wax 75cm x 63cm x 43cm
Isil Onol	Haptic Bust of Sophocles	Data on computer
	Surface	Brass 30cm x 27cm
Murat Ozkasim	Takes a lot of Licking	Bronze and chocolate 8.5cm x 7.5cm x 6.5cm
Megha Rajguru	Sophocles. Circa 2000	Hair and plaster 39cm x 22cm
John Swindells	Inverted Head	RTV polyurethane 25cm x 20cm x 23cm
Zoha Zokaie	Contours of the Face	Aluminium wire & paper, alginate, sand 3-Part work, each: 30cm x 35cm x 30 cm
	The Tale of its Touch	Copper sheet 40 x 60 cm

Table 4-2: List of the commissioned artists of the pilot study and their artwork titles



Hair / Expression:

These two objects have been influenced by the ancient African 'Lukasa' or memory board. The Lukasa uses representation to record and communicate historical facts, whilst retaining the opportunity for creativity by allowing the reader or storyteller to elaborate on the facts as they wish. Each piece is made from cast silicone, black pigment and a small metal ball. The internal textures have been developed from those seen on the bust and presented in a more true-to-touch format. The ball has been added to provide feedback of internal textures, and to create a more engaging, tactile experience. The first piece Expression illustrates the ruffled brow and tough expression present on the bust. The second piece Hair represents the full beard and the thinning hair, descriptions included both in the artist brief and the label accompanying the bust at the British Museum.

Expression
Cast silicone, black pigment
and metal
14cm x 10cm x 2cm

Hair
Cast silicone, black pigment, metal
and hair
14cm x 10cm x 2cm



Figure 4-8: Tom Ainsworth's work(s) 'Hair, and Expression'



Unravelled:

This piece transforms surface information from the original bronze bust into something invitingly tactile as opposed to the original's precious state. The piece is made from solid latex, giving it a sturdy but almost malleable rubber form. The piece originates from a section of the original head approximately four fingers wide. The length of this section starts at the nape of the neck and runs to just under the chin; as if the head was cut and sliced into a long wave. In this new position viewers can run hands along the scalp and face in united and one linear movement

Latex
67cm x 11cm x 9cm



Figure 4-9: Carolyn Alexander's work 'Unravelled'

→

Hairball:

This work focuses specifically on the tactile qualities of hair and its uses as an art material. The sculpture is a large hairball measuring approximately 60cm in diameter. In a way the work addresses how hair is related to identity, ethnicity and a political/ideological statement; in this case it is Sophocles's Greek curls that bring power and authority, not just his ethnic roots. Because of its exaggerated dimensions and perfect roundness, this work brings hair close to life; it therefore invokes different urges/feelings in every visitor, such as disgust, tenderness, fear, playfulness etc. depending on their personal memories and relationship to hair.

Hair, hessian, cotton and stuffing
70cms in diameter (approx)



Figure 4-10: Louise Atkinson's work 'Hairball'



The Wiry Old Man:

This wire representation of the Poet's head represents the contour of the bust. Because Lynn Cox is a visually impaired artist, she has brought a different insight to the study. Unlike the rest of the pieces in the exhibition, this work was created as a result of the artist's interaction with the direct replica of the bust through touch, without referring to the photographs or the vision of the original at the Museum; whereas the rest of the artists were able to bring in their vision (in some cases they looked at the original, in some cases the replica, and in others only the photographic or digital representation of the original and/or its replica). The emphasis in this work is given to highlighting the hair, beard and mustache of the head so that their tactile impact is greater than the rest of the features. In addition, the heads flexibility gives a psychologically different perspective from the original.

Wire
30cm x 30 cm



Figure 4-11: Lynn Cox's work 'The Wiry Old Man'



Viscid Head:

This sculpture was initially constructed and moulded in materials such as clay, fibres and cloth. Enlarging the scale considerably from normal body-scale allowed a further consideration of the object. The form focuses on the folds and furrows caused by the wrinkled brow and ageing face, the line of the rolled band binding the layers of hair and the twists and curls of hair and beard. The final material for the sculpture is wax so to give the piece a live fat/flesh like quality that speaks about the body to suggest it could transmute at any point. The artist's intention was to encourage the viewer to encircle the form running their hands over the folds, curves and furrows and become part of the interpretation. For the sighted visitors, this object complements every other object in the room constantly through its dimensions and creates a relevant vision from other objects' angle and proximity, without overpowering them.

Wax
75cm x 63cm x 43cm

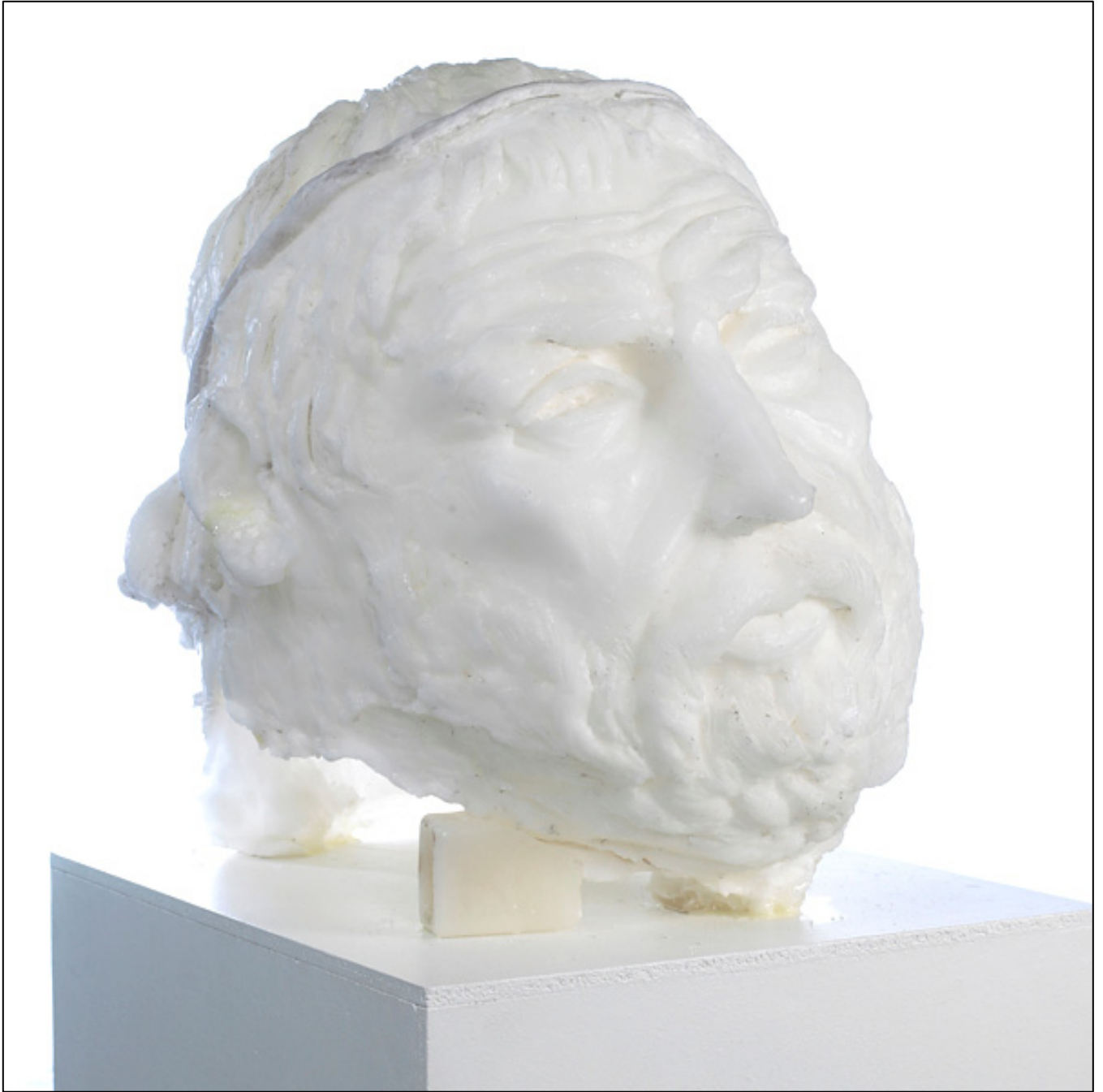


Figure 4-12: Deborah Gardner's work 'Viscid Head'



Surface:

This piece is an engraved metal plaque of a section from Sophocles's face, in order to bring missing tactile elements back to life, and to interpret tactually. On the replica bust, most of the surface details under and around the eyes are actually visual details. Although a seeing eye completes these details as bumps through shadows, they cannot be felt easily through touch as the surface in that area is very smooth. Therefore instead of working with a mould cast from the object, I worked from a photograph that captures this information. The image was engraved after the photograph was manipulated to enhance the shadows and highlights on the surface. Although plaques are usually viewed from one position, this work, like the rest of the pieces in the exhibition, was presented in a freeform on the plinth to allow optional multi-directional vision and touch.

Brass
30cm x 27cm



Figure 4-13: Isil Onol's work 'Surface'

Haptic Bust of Sophocles:

This piece is the 'touch' simulation of Sophocles bust. The 3D computer model of the bust can be felt through the stylus of the Phantom Omni device. This piece is the starting point of the exhibition. The physical artworks in the room create the physical touch properties that are missing from this simulation in order to create a full tactile interpretation. With generous support from Metropolitan Works in London, I was able to scan the replica by using their state of the art Faro laser scanner, and convert it into a 3D model. Researcher Alistair Barrow from the Interactive Systems Research Group, University of Reading provided haptic programming.

Data on computer
With Phantom Omni Device
(Also used Faro 3D scanner)



Figure 4-14: Isil Onol's work 'Haptic Bust of Sophocles'



Takes a lot of Licking:

This work is different from the other pieces of the exhibition as it addresses the tactile receptors on human tongue but also allows placing a rapid prototype replica directly into visitors' palm. The artist of this work proposed to give away these edible replicas of the Bronze Bust of Sophocles to the visitors not only to enable them to experience a neglected ways of exploring an art exhibition piece, but also offer the option to take away something temporary (or permanent if they wished) from the exhibition to their preferred location.

Bronze and chocolate
8.5cm x 7.5cm x 6.5cm
(dimensions for each piece)



Figure 4-15: Murat Ozkasim's work 'Takes a lot of Licking'



Sophocles. Circa 2000:

This is a reconstruction of the head of Sophocles. The model underneath is not a replica. It sits on a plinth giving the image of the playwright an elevated status it rightfully deserves according to the artist. The head is on view, the face is turned away and the hollow gaze is hidden. The head full of hair stares at you at eye level. The nape of the neck is on show and skin and pores are deliberately enhanced. There is an extra sign on the plinth, other than the Braille and the usual identification labels, that says 'Rub the top of Sophocles head three times with your index finger to gain wisdom'. It is an inviting sign. There are traces of hair loss. Some hair was left on the plinth to start with, and we expected more hair to fall from the sculpture as people interacted with the object. At the end of the exhibition several more strands of hair had fallen on to the plinth, hairs such as a real person would have shed. The sculpture offers a deliberate feel of misplacement.

Hair and plaster
39cm x 22cm



Figure 4-16: Megha Rajguru's work 'Sophocles. Circa 2000'



Inverted Head (Sophocles):

The process of making this sculpture (Figure 4 21) involved inverting and exposing a copy of the bust of Sophocles so that all the surface detail of the head is shown in a more abstract but still complete form. The original bust at the museum is hollowed and it is possible to see through the eyes, mouth and its broken neck. The replica provided by the museum on the other hand is filled, as it is made of resin. The haptic simulation was able to create the hollowness, but could not replicate the texture. This inverted sculpture supports the simulation by replacing this missing information, and allows visitors to study the inside of the bust. The loose rubber skin is placed over a rigid plaster and wood structure that allows it to be mounted like the original bronze. This work emphasises a tactile imperative that generates meaning in the relationship between material, technique and form.

RTV polyurethane
25cm x 20cm x 23cm



Figure 4-17: John Swindells's work 'Inverted Head (Sophocles)'



Contours of the Face:

This work is focused on the curves representing the lines on the sculpture's face. This piece consists of three separate but related parts which are each hidden in wooden boxes. Each part is reached through holes on the front side of the box. Touch is experienced through two different materials, aluminium wire and alginate (special powder used for moulding in dentistry). The aluminium wire provides a cold metal feeling close to the sculpture's own material, whereas the alginate stands for the softness of skin. In the third part the viewer gets to explore their own understanding of the sculpture's contour, in a flexible body of sand. The viewers are invited to create and draw their feelings of the contours of the sculpture's face on the surface of the sand by taking inspiration from the rest of the artworks and the focus object, the replica of the bust, in the room.

Aluminium wire & paper, alginate
and sand

3-Part work, each:
30cm x 35cm x 30 cm



Figure 4-18: Zoha Zokaie's work 'Contours of the Face'



The Tale of its Touch:

This giant book sculpture visually focuses on the textures created by the hair both on the face and on the head.

Persian calligraphy is embossed among curves of the hair on to a copper sheet. The text which reads through the calligraphy describes the artist's own feelings when gazing at the sculpture. This adds to the interpretation as the artist also is a spectator of the original. A distant touch, the type of touch which is common when it comes to museum objects, is communicated with this text. The piece is staged as an open book. The writing is in Persian but the translation of the lines guides the viewer to create their own imaginary touch while experiencing a physical one through the material presence of the sculpture.

Copper sheet
40 x 60 cm



Figure 4-19: Zoha Zokaie's work 'The Tale of its Touch'



Figure 4-20: Work in progress – ‘Viscid Head’



Figure 4-21: Work in progress – ‘Inverted Head (Sophocles)’

4.5 VISITORS AND HAPTIC INTERACTION

The device that was used on the first Tactual Explorations project is the PHANTOM® Omni™, developed by SensAble Technologies. By no means does the project claim to have the latest technology. The aim was to keep the haptic simulation as part of the setting, as one of the pieces of the collective interface. Even though haptic technologies are relatively new and most of its applications usually become central to an event that includes it; at this exhibition technology was used as a medium rather than being the focus of the exhibition. In fact, the physical artworks took over by completing the missing tactile elements from the simulation. Haptic technologies and the physical objects of the exhibition almost existed to improve each other, as a whole Augmented Reality solution. (Figure 4-22)



Figure 4-22: Visitors engaging with the haptic simulation

I positioned all the plinths with a view of the bust of Sophocles so the visitors would have the chance to refer to it by sight if they wished. The haptic simulation was also facing the bust and therefore it could be explored either by looking at the screen or observing the original. Once a reference point was recognised, it was very easy for sighted visitors to use the haptic simulation as an interface for the object, by feeling the contour of it without looking at the screen but by observing the original only. We also supplied an optional cover for the screen for this purpose. The height of the haptic device as well as the other exhibits could be adjusted for access. Some wheelchair users preferred to place it on the portable table that was kept next to the plinth. The human element of the project showed itself here too, as all services were optional and they

were provided by an assistant or assistants in the room without overwhelming the visitors but attending to their needs if they were asked to.

4.6 WORKSHOPS

As part of the Tactual Explorations exhibition, I planned and arranged six workshops in the studios and rooms adjacent to the gallery. These workshops were designed to be non-exclusive, encouraging everyone or anyone who might be interested in taking part. The big majority of the attendants were museum and gallery workers, school teachers, art and design students to explore some of the techniques behind the exhibits. We also had some children taking part depending on the nature of the workshop. In total, 65 people attended these workshops. The workshop titles and their facilitators were:

- ☐ Access to art: Whose responsibility anyway? led by Caglar Kimyoncu
- ☐ Tactual drawing and mark-making led Carolyn Alexander
- ☐ 3D Collage led by Louise Atkinson (Figure 4-23)
- ☐ Tactile drawing led by Lynn Cox (Figure 4-24)
- ☐ Sensory Stories led by Amy Hirst (Figure 4-25)
- ☐ Drawing by touch led by Tom Ainsworth (Figure 4-26)

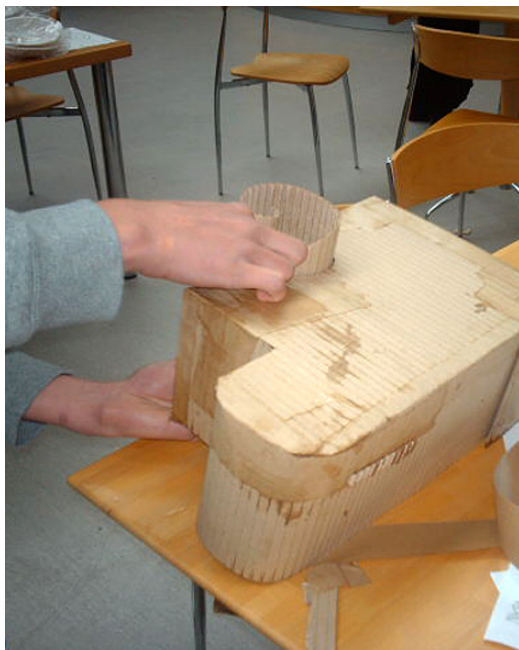


Figure 4-23: A participant creating work at Louise Atkinson's workshop '3D Collage'



Figure 4-24: Lynn Cox instructing participants by touch at her workshop 'Tactile Drawing'



Figure 4-25: 'Sensory Stories' workshop with Amy Hirst



Figure 4-26: Some of the work created at the 'Drawing by touch' workshop

Aimless visitor engagement is against the principle of this project as a whole. What I mean by this is, creating a wow factor for the visitor with enjoyable activities for the sake of raising numbers was not what I aimed for. Therefore, instead of engaging the public with the novelty of technologies or materials, I kept the theme of the workshops very close to the concept of the exhibition. The workshops were aimed to create awareness of touch as an integral tool in creativity, as well as means of communicating with the unknown. The understanding of instructive touch was exercised with these workshops. Other important reasons for creating these workshops were to observe participants in action, to let them experiment with the materials and styles of the exhibition pieces, and provide them with something they can take with them that is particular to this event. Furthermore, the workshops had a very important role in continuation of the inclusive theme of the project. Therefore the workshops were for everyone, regardless of their background or financial capabilities since the information provided was free and open to all. Participants also made positive comments about these factors. While some of them focused on workshops' availability without a financial cost, others commented on how the content affected their work. Some examples of these comments:

"Great idea to hold these workshops. Could we have them regularly? Being free made them accessible to all" Karen Dewhurst

"...inspired me to run similar exercises at work with children..." *Ami Hallgart, Education Officer*

"...Really broadens the mind of what textiles is actually all about. Touch and textures. I feel like this will help me explore different areas in my own work" *Emma McManus, Textile Craft Student.*

Three of the workshops focused on drawing through touch. These were not the ordinary kind of object-making activities that aimed to engage children, instead they occupied a greater aim and a theory behind them that encouraged all age groups to unlearn their usual tendencies and focus on the neglected sense of touch. The first drawing-related workshop, 'Drawing by touch', focused on the hidden information and treated the hand as a photographic lens to bring this information to light. Through drawing processes, actions of craft-making by using simple materials such as newspaper, and group discussions, it investigated the relationship between visual and tactual information. The second drawing-through-touch workshop, 'Tactile Drawing', similarly focused on the image-making led by touch, but it was different in its use of wider range of materials and for being particularly suitable for those with visual impairment although it was open for everyone over the age of 3 for health and safety reasons. The third drawing workshop, 'Tactual drawing and mark-making' focused on the lines and

shapes and the material to be experienced by fingertips. In other words, the finished product would be a tactile artwork. This workshop used thin layer of clay built by tone, line and texture represented through found object. This three dimensional image then was used as the basis of a cast, to introduce the casting of the exhibition piece Unravelling that was made of latex. Once the cast was separated, the participants were left with the tactile drawing on the plaster which was then decorated with paint. In addition to the drawing and image-working workshops, another practice-based workshop was the '3D Collage' which created three dimensional collaborative installations by using two dimensional imagery. Participants at this workshop were also given a small lecture about collage-making and the impact of touch, as well as introducing other artists working in this technique.

The other two workshops at the event were more conceptual and theoretical, not only to tie in with the exhibition theme but also to keep a good balance of theory and practice. The 'Access to art: Whose responsibility anyway?' workshop encouraged curators and artists to question the myths about making art accessible and exploring creative solutions beyond the access regulations to reach a wider audience. The workshop also included a session to discuss stages of curating and at what point accessibility should start being part of an art project. The last workshop 'Sensory stories' focused on memory, then filtering out tactile experiences from visiting these abstract moments in the memory through object-handling. Participants not only had a group discussion but also created instant stories through touching random objects in different shapes and materials. At the end of the session, participants stated that this was an emotional and a motivational workshop for them.

4.7 RESULTS OF THE PROJECT

The exhibition provided practical data vital to the progression of my practice-led PhD and engaged audiences relevant to the research (e.g. those visually impaired). Special Needs schools in and around Huddersfield arranged visits to the exhibition and they gave valuable feedback on their experiences. More than 265 people attended the exhibition during the first 5 days and another 65 attended the workshops. The audience interaction with the artworks was observed and recorded and feedback was obtained via questionnaires and a visitors' book.

The majority of the comments in the visitors' book and the feedback forms were related to "being able to touch". The only time people referred to the haptic simulation was when they were directly asked. It was important for this project to achieve a transparent

use of technology and it was vital that technology did not take over but became merged with the rest of the exhibits. Observations and visitor feedback showed that this ambition was realised and the haptic simulation successfully remained as another piece of the exhibition. Also, on the feedback forms, unless asked, people always referred to the tactile aspects of the exhibition and its individual pieces rather than the haptic technologies used. For research purposes, the data enquiry first looked at the visitors' interaction with the exhibition as a whole and then focused on the results gained from the engagement with the haptic simulation alone. The aim was not to replace the traditional museum display, but to enhance the information conveyed about the exhibit, to a wider, more diverse audience.

Five questions were asked to 30 randomly selected visitors, regardless of their disability, social status, or cultural background (Table 4-3). These questions might be considered as "leading" questions by many researchers but in order to direct the participants to the use of 'interface' rather than the technology itself it was considered necessary to use some kind of guidance in the sentence structure.

Another 30 randomly selected visitors were asked more generic questions about attending museums and their feedback on the Tactual Explorations concept. According to their answers (figures rounded):

- ☐ 86% have never been to the British Museum
- ☐ 93% visited the exhibition because of its tactile content
- ☐ 93% have never heard of the word "haptic"
- ☐ 100% have never engaged with a haptic device
- ☐ 100% would like to see other museum objects interpreted in a similar exhibition concept

Among children and the younger audience, the average time spent with the haptic simulation was 10 minutes and the average time spent in the exhibition room was 30 minutes. With adults, the time spent with haptic simulation was 6 minutes and the average time spent in the exhibition room was 25 minutes. In order to keep the visitors experience as genuine as possible, during the observation no questions were asked and therefore the results of this section were arranged as 'younger audience' and 'adults' purely from their appearance. The feedback forms included questions relating to visitors' age, occupation and whether they considered themselves to have disability or not. For the nature of this research, gender was not considered to be relevant, and

Question / Feedback	Rating				
	SD	D	U	A	SA
Tactile artworks enhance the "Haptic" simulation by offering the missing physical information	0	0	0	22	8
Interpreting museum objects through tactile works is a very inclusive approach	0	0	0	21	9
With the help of the tactile artworks, the computer interface seemed to vanish	0	0	5	12	13
After interacting with all the artworks, I felt like I interacted directly with the Bust of Sophocles	0	0	2	10	18
I felt that the overall tactile interpretation provided space to add my own interpretation	0	0	0	2	28
Number of people					
SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree					

Table 4-3: Five questions asked to 30 randomly selected visitors

therefore ignored. There was also constructive criticism from the visitors. Even though the majority of the people (98%) found the haptic device easy to use, the other 2% expected to be provided with written instructions to use the device. Although such instructions were avoided deliberately as it would change the direction of the data collection, these suggestions would be considered in future exhibitions. Some visitors suggested a blind-folded tour of the exhibition, as well as a day allocated to adults only. These suggestions will also be taken into account especially the option to blindfold visitors in order to offer a touch-only experience.

Most workshop attendees criticised the limited availability of the workshops. This is a very valid criticism considering the event aimed to be for everyone; however the budget did not allow any additional free workshops. The slots were allocated on the first come first serve basis without any discrimination, therefore allowed everyone to have same access to the workshops. For future events, repeat workshops will be provided in order to open up these activities to more people.

A visitor book was filled by people who wished to leave a comment or feedback about the exhibition and their experiences. This book that was placed at the entrance by the audio point provided random qualitative input as people were not approached to write in the book; the comments left were entirely voluntary. Some comments taken from the visitor book:

"This exhibition gives us, who have the gift of sight, a unique sense of how the world must appear to people who are denied of a sense which most of us take for granted."

"A very interesting and different exhibition. I enjoyed it very much and it gave a different view on what we see and what we touch"

"My son is blind, it's nice to see him catered for"

"... it is nice that an artist was around so we could ask questions too."

Excellent work. My daughter is handicapped with very limited sight and it helped her to feel different".

"... emotional, involved experience. A participant, not just an observer"

"...it's so wonderful to be able to touch the exhibits without being told off! Being a participant draws one in so much more..."

"I have heard a lot of positive feedback about this exhibition and associated works, more through touch. It seems strange however to be able to touch everything. As a [tactile] person this is like a breath of fresh air."

"After initial uncertainty, soon 'felt' the exhibition. Extremely interesting, well presented."

"... it was such a change from the normal art exhibitions..."

4.8 MAIN CONCLUSIONS TO TACTUAL EXPLORATIONS

By investigating the effect of a haptic display that is surrounded by physical artworks which represent the tactile properties of a museum object, I introduced a new method of a tactile interpretation to this precious exhibit. This interface was then proposed as a model for potential future exhibitions that are focused on individual museum pieces, where visitors would engage with a number of physical and virtual works in order to study the original. The exhibition and its workshops were fully accessible and available to visitors free of charge, in order to include everyone regardless of their financial or social status. The exhibition was designed especially, but not exclusively, for visually impaired visitors. At the time of commissioning artists, the competition was kept open to all artists regardless of their background and disabilities. The exhibition's 10 selected artists came from diverse backgrounds. As the result of the event and exhibition, two types of touch were identified: inquisitive touch and instructive touch. The instructive touch was concluded from the observations and implementation of the workshops. These two types of touch were then declared collectively as the touch that occurs in this research in general.

A side product of the exhibition was a website that was launched to provide details of the project and those involved, including, the artists, volunteers and sponsors. This website was designed according to accessibility requirements by providing clear design, regular and high contrast versions and passing the XHTML/CSS tests. The website also provided mp3 files of the audio description (optionally in parts or a one-recording) to the visitors in advance if they wished to use their own devices to listen to the guide instead of the ones available in the gallery.

A booklet in written format and Braille showing the work in progress was produced as reference material. These were handed out to visitors to the exhibition. Information in this booklet was also included in the audio guide.

The project made a difference by:

- ☐ Exploring the main and hidden aspects of “touch” in an object that is exhibited visually.
- ☐ Providing opportunities for people with limited or no sight to have access to art exhibits;
- ☐ Using Augmented Reality and Haptic Technology to enhance access to traditional art-form;
- ☐ Bringing interpretation of precious exhibits in bigger museums to visitors living away from these museums;

The following were available at the exhibition at all times:

- ☐ Braille labels on each exhibit;
- ☐ Audio guide (on cassettes, on listening point and available to download);
- ☐ Braille version of the exhibition booklet;
- ☐ Clear text on print material and labels;
- ☐ Space around each exhibit for wheelchair users and groups;
- ☐ Attendants to help visitors with anything from filling-in forms to use of equipment.

The project was completed with the view of creating further similar exhibitions that interpret other museum objects, by using the experience gained from this study. The results were presented in national and international conferences and it was published in a book entitled *Touch in Museums* (Chatterjee 2008) that brought together work of scholars and artists from the similar backgrounds.



Figure 4-27: A journalist taking notes at the Private View



Figure 4-28: Visitors interacting with the 'Contours of the Face' exhibit

CHAPTER 5: Other Projects & Experiments (Practice)

Project 1: User-feedback Experiment

Project 2: Touching the Bronze Bust of Sophocles

Project 3: Haptic Vision & Tangible Images

Overview

The practice/action element of this study progressed in three phases: before, during and after the Tactual Explorations exhibition. The first phase developed as background research to the Tactual Explorations project. In that first phase, the *User-feedback Experiment* was realised. The next project in this chapter, the *Touching the Bronze Bust of Sophocles* started after the Tactual Explorations project was complete, although it is possible to see elements of it during the planning stages at the time of selecting the bust as the focus object. The final project is the *Haptic Vision and Tangible Images*, which started its roots partially at the development stages of Tactual Explorations project, however only after it was established as a standalone concept following ideas provoked by the Tactual Explorations project. The main work took shape after the Tactual Explorations project was complete. This chapter focuses on these three projects that supported Tactual Explorations.

Appendices at the end of this thesis and the enclosed DVD include some images, videos and other supporting documents including questionnaires and publicity material.

5.1 PROJECT 1: USER-FEEDBACK EXPERIMENT

As first practice element of this research, a public exercise was undertaken in an accessible Central London location⁵² to review the role of touch in examining museum objects for sighted people. The primary aim of this exercise was to study subjects' reaction to tactile information as an interface to a visual exhibit. The route of the inquiry was this hypothesis that by forming a tactile interface to the original, additional representative tactile information can enhance the visual information when examining an exhibit. The main task involved in this exercise was to compare two hidden objects by touching them while observing the main object which was identical to one of the hidden objects.

What makes this work something more than just a controlled experiment is its treatment of the hired room in central London as a public exhibition setting, rather than just a research lab for selected individuals partake. In other words, the experiment did not engage with previously arranged research participants, but instead chose only random people that stopped by the exhibition room at different intervals on the day to inquire what the event was about.

As a result, 15 randomly-selected people participated in the study. The sample size was kept small in order to allow enough time for each participant to complete the tour of tasks. There were additional visitors who just wanted to find out about the project but did not wish to take part, or our time did not allow completing the tasks. Although positive and inquisitive, their comments are not included in this study.

5.1.1 Process

For this exercise, three hand-carved wooden sculptures were found where two of these objects were identical and the third was slightly different in contour, but in the same dimensions and material, with the exception of being polished. Although these differences were small, they were easily noticeable by sight, however not so obvious with touch alone. One of the two identical objects was displayed openly and defined as the main object (this was to represent an untouchable museum exhibit), and two other sculptures were placed in separate non-transparent bags. While the participants could see but not touch the main object, they were asked to identify which bag contained the

⁵² I hired a ground floor room with easy public access and see-through glass walls to enable transparent view for passer-bys to view the exercise and for participants not to feel in a controlled/closed environment.

object identical to the one they could see. This exercise was timed and photographically documented. To ensure confidentiality, participants were given the option not to reveal their identities. None of the participants wanted to give their names, however those who allowed us to photograph them during the experiment gave permission for these images to be published in this thesis.



Figure 5-1: The three objects used in user-feedback experiment

There were three stages to this exercise. The first stage involved asking the participants to guess the material and the temperature of the main object before handling either of the hidden objects in the bags. It was also necessary to inform them what the exercise was about and why they were not allowed to touch the main object (protected museum exhibit). The second stage was the tactual exploration stage which required the following unobtrusive observations to be made:

- ☐ Do participants prefer standing still at the table, or walking around the main object while examining the hidden object(s)?
- ☐ How long (in minutes) does it take for each participant to recognise the (right or wrong) object and do they answer with confidence?
- ☐ What kind of distance do they keep from the object?
- ☐ Do they use either hands or just the one?
- ☐ Do they keep both of the hands inside the bag?
- ☐ Do they keep their eyes on the main object?

This was followed by the final stage which included a question & answer session where the participants were asked to evaluate their experience through pre-prepared



Figure 5-2: A participant interacts with the hidden objects at the User-feedback exercise

questionnaire and also to answer questions and confirm feelings/opinions with regards to the first stage of the exercise.

5.1.2 Final Stage Questions / Observations:

- ☐ Did the participants accurately guess the material?
- ☐ Did they roughly guess the surface temperature of the object?
- ☐ Were they surprised with the results?

Questions to participants:

(When a rating was required, 5 would be the “best” case.)

- 1) To what extent did you have a sense of touching the main object? (Rate on a 1-5 scale.)
- 2) Did you at any point during the experiment feel that the object you were watching has vanished and you were only interacting with the object in the bag? (Yes or no)
- 3) To what extent did you think touching the object was important in order to gather the texture information? (Rate on a 1-5 scale.)
- 4) To what extent did you think the hidden object was only an interface for the main object? (Rate on a 1-5 scale.)

Participants were asked to rate the following on a 1-5 scale:

- ☐ Information enhancement
- ☐ Sense of freedom
- ☐ Importance of touch (in examining this object)
- ☐ Ease of use / comfort (the overall system)

5.1.3 Results / Conclusions to the User-feedback Exercise

Throughout the study, all participants were observed as the users' behavior was vital for the results.

Results: Numeral data to support qualitative feedback

- ☐ 12 out of 15 participants felt that the replica object was an interface to the main object.
- ☐ 7 out of 15 participants could not guess the material of the main object before touching the replicas.
- ☐ 8 out of 15 participants assumed that the main object's temperature was warmer than it actually was⁵³.
- ☐ 12 out of 15 participants were able to identify the duplicate object.

Results: Observations

- ☐ 10 out of 15 participants picked up the objects, instead of examining them on the display table.
- ☐ 5 out of 15 participants chose to walk around the original object and observed it from different perspectives.
- ☐ 0 out of 15 participants touched both objects at the same time

The table below demonstrates the answers of the participants to the questions with scaling of 1 to 5, where 5 is the best case.

⁵³ In order to make this temperature comparison, two blocks of different wood structures and a block of metal structure were supplied. Visitors were asked to touch those to confirm which one reflected their imagination of the temperature while looking at the original.

Question	Rating						
	Worst	1	2	3	4	5	Best
Information enhancement		0	1	2	3	9	
Sense of freedom		1	0	0	12	2	
Importance of touch		0	0	3	3	9	
Ease of use / comfort		1	0	2	2	10	
		Number of people out of 15					

Table 5-1: Observation results of the User-feedback exercise

The results indicate that the addition of tactile feedback as a separate interface tool to a visual display can enhance the learning experience, and increase the accuracy of tactual perception, while the freedom of movement and the use of tactile interface can create the illusion of one-to-one contact with the object. This freedom of movement was not just limited to walking around the furniture and objects, but also to the freeform presentation of the objects. As it was observed that most of the participants preferred to pick up the replica object that was hidden in the bag and walk around the exhibit with it instead of staying at the examination desk, function of this feature will be researched into more detail⁵⁴.

It was clear that the users generally can have assumptions about the temperature and material information of the object, if visual was the only available interaction method. In this exercise, a high percentage of users were wrong about the object's tactual properties before touching the replica objects. The visual information was enhanced with the aid of the tactual interface (the hidden objects).

⁵⁴ Because of this result, all the artworks in the Tactual Explorations project were presented as freeform objects for visitors to be able to pick up or control its height. It must be noted that chronologically in the research, the Tactual Explorations project was realised after this User-feedback exercise.

5.2 PROJECT 2: TOUCHING THE BRONZE BUST OF SOPHOCLES

As another practice element of this research, the Touching the Bronze Bust of Sophocles is vital to this thesis as it tests my understanding of the user-interaction with my selected object and also documents my research behaviour. I have come to comprehend that this thesis would be incomplete if investigated only with the Tactual Explorations exhibition (and the User-feedback Exercise) as its practice. I saw the need for observing myself as a researcher as well as the visually impaired people around the selected object in its location, to be able to conclude that touch is the best way to interact with the Bronze Bust of Sophocles and one good way to enable touch is by providing a tactile exhibition, like Tactual Explorations, as an interface to it. It was also important to study the replica in order to explore my selected object together. An important role these experiments had within the project was to establish that touch is involved not only when examining a museum object, but also on the way to this object's location as touch occurs as a continuous humanly sense. In other words, this practice element served an additional purpose which was to record the research behaviour and the performative actions of the researcher as well as the users involved. The overall aim behind these exercises was to bring myself and the participants a step closer to the selected exhibit.

This practice element has another intention it is to bring the study back to Tactual Explorations as the analysis of the Bronze Bust of Sophocles as well as a concept of exhibition; and link all of the practice work by testing and observing real-life scenarios in the presence of the Bronze Bust of Sophocles; and with its replica outside the museum. This study invited a small focus group of visually impaired people that agreed to take part in this study to the British Museum and observed their interaction with the selected exhibit. In addition to this, participants are asked to discuss their views.

5.2.1 Museum Visits

As discussed in the *Tactual Explorations* chapter, the Bronze Bust of Sophocles in the British museum is very inaccessible. Apart from being in a glass case, the exhibit doesn't have a place in the Museum's audio description pack; in addition to this the room is accessed by a set of stairs, or a lift that is hard to find and not attended regularly. At times the room itself is closed due to staff shortage. All of these variables made this object perfect for using as the selected object for the Tactual Explorations project in the first place. Although the Tactual Explorations project is an analysis of the bust in general term, it was still necessary to visit it in its usual location to interact with it.

This exercise consisted of four visits with participants to the museum, and two without, entirely for the purposes of this research, on different days. The four participants for this research were Margo, June, Peter, and Amelia. They all agreed for their real first names to be used in the analysis of the work as well as the video footage to be used for this research. On each visit, I was assisted by a cameraman and a second person to help in the case of a problem⁵⁵ during interviews or at the time of meeting up.

On all visits, before the arrival of the participant, we requested access to the lift and a wheelchair to be provided for our cameraman. Because of our access requirements, it took between 15 to 25 minutes⁵⁶ to get to the room on each visit. Once the cameraman was ready inside the room, I went to the main gate to greet the participant as previously arranged. We were not allowed to use tripods inside the museum, microphones or even lights. However we had the advantage of using the camera from the wheelchair level. Therefore other visitors were not distracted by our actions. The same reasons allowed me to unobtrusively film and observe these other visitors within the room especially when our participants were not in the room yet or when they were about to enter.

The visits to the museum also carried an experiential attempt to experience physical touch, and even the sense of touch on the museum itself, from different dimensions. The development of the touch scenario started long before coming in front of the Bronze Bust of Sophocles. There were many variables involved. My and the participants touch were observed.

One common element seen in two of the visits was the reaction of the guide-dogs of my participants to the plinth that held the bust. No matter how many times we walked around or towards it, both of the guide dogs (separate visits) were trying to get their owners away from the plinth as it was an obstacle for them and because there was not any difference on the floor surface, my participants also had no choice but ignore the object. Other two participants did not have guide dogs; however they too saw the plinth as an obstacle with the guide of their canes. Amelia said she would treat most things as an obstacle unless she was sure that it was safe. Although she can see some images and differentiate light she found this exhibit particularly difficult as the glass

55 For example, this second person helped arranging refreshments for the participants, as well as helping carry equipment and driving Margo when she needed a lift to the museum.

56 This is after parking the car at the Disabled parking spot, and includes the time to wait for a wheelchair which was booked in advance; and the waiting time for someone to let us to the lift which is not open to all.

case was hit by a spotlight and it was creating uncomfortable flares for her and as a result she could not see anything.

Earlier, during her visit, I asked June what would be the first thing she would like to know about this object. She replied “Well, I’d like to know that it was here first to start with”. Not only did she expect the exhibit to have some form of audio description, she said without any guidance she would have assumed this was just a glass case.

The common reaction was that they would not be aware of the existence of this exhibit in anyway unless I stopped them and made it apparent. When I asked June what sort of information she would like to have access to if she was visiting the place free from this research, she responded “Well, I’d like to know that it was here first to start with. So I’d want to be able to find the case myself...” and added that she would like to have an audio description of the object. The British Museum currently does not include this object in their audio tour. Therefore the access to the exhibit becomes even more exclusive. Margo’s response to the same discussion was “I understand in some ways why they ought to put them in glass cases; it will just be touched and damaged. However, it needs supervision.” Peter’s comment on the same issue was “if an object like this was surrounded by maybe a rubber mat or something, [like that] on the floor and you would notice the different texture to stand on, and realise that there is something there”.

With all the participants we touched the glass case on different points and rubbed our fingers and placed our palms against the glass to gather a better sense of the object’s existence through this case. To me it felt and looked like we were trying to get inside the case. The gallery attendant at each visit was a different person and each time we ended up drawing attention to ourselves and fight a corner for touching the glass. Because of the participants’ visual impairment this was allowed in the end, but our endless attention to the object started to worry the attendant at times. As a result the barrier around the object to me became more and more apparent. And the participants, despite getting closer to the object and enjoying the information-gathering, started to get anxious about being around an object that was this limited for everyone. Some made political comments about the imperialist approach of museums of this kind and raised disagreement for holding the objects per se let alone inside glass cases. I tried to give them as much spatial information as possible also, so I could observe how the reference points were established.

While describing the object to June, as I did with everyone, I mentioned its hollowness and how it was possible to see through the eyes, and with the right angle found some of this was also visible under the neck where the bust was possibly broken off a fuller sculpture before being found as a head. This description interested June more than any other aspect of the bust and we conversed about it more. During this conversation a metaphor of a full-head mask came about in order to describe the hollowness and the thickness of the bust. For me, even as a sighted person, it was difficult to convey this vision that I was seeing on the bust and I realised June was probably imagining a mask that is different to the one I am describing. If she was describing a mask for me I could only resort to my imagination too. The unreliability of the verbal description started to reveal itself here. This proved to me once more that a tactile representation would bring us closer in experiencing this feature. I also reflected on the Tactual Explorations project and confirmed the importance of each artwork that was set to represent a feature of this selected object. In the case of hollowness for example, John Swindell's 'Inverted Head' work represented the inner vision of the bust, the one we would not be able to feel otherwise. And in addition to this, the Haptic Simulation also allowed visitors to study the inside of the object, by providing a hollow model (i.e. the cursor of the stylus could go inside the model from the eyes, mouth and ears to feel the contour information and the negative of the bumps on the inside surface, and come out from one of those holes again). To be able to make such mental comparisons in front of the object and revisit the Tactual Explorations project this way provided valuable conclusions to the study.

At these visits I also wanted to know if the room changed for the participants in anyway, or whether the existence of the object started to mean something more, now that we talked about it and walked around it as well as mimicked the act of touching it. Although I got positive responses about each of them becoming more familiar with the room, I could not make relevant conclusions other than that the sound levels and the lighting in the room created further obstacles for my participants. Although we gained sense of presence of the object relying on the placement of the plinth and glass case on top of it, the room itself would need more research exercises to have other conclusions. For the purposes of this research I did not see any relevance therefore limited my exercises to the close surroundings and how the room conditions affected accessibility.

5.2.2 Interacting with the Direct Replica

These exercises took place in three locations on separate days. One of these was with Peter in a meeting room that we booked at the RNIB (The Royal National Institute of Blind People) in London, and the other two were with June and Lynn in their houses in London. Before these exercises took place, the visitors and artists of the Tactual Explorations interacted with this replica too. Their comments also effect the formation of the conclusions.

My first visually impaired participant who examined the bust was Lynn. Also as one of the artists at the Tactual Explorations exhibition, she had a chance to examine the bust before the exhibition, as well as after. Before the exhibition, her main aim was to get familiar with the object as much as possible so she could create a wire-made version of the object by using her artistic vision through touch. During this time, after our session, she kept the bust for a fortnight to study it further to achieve a better contour for her artwork. Lynn's first reaction to the bust was the deep frown lines on the face. She asked me if what she was holding was the face of a scarred man. This comment made me confirm once more how a direct replica is mainly for sighted people, but I had to hear the actual side from Lynn as not only she has been living with her visual impairment for a long time, but also access is her domain due to her professional expertise of being an access consultant for many years. Her remark was that every blind person is different therefore it would be wrong to draw strict conclusions, however some people sees replicas as 'better than nothing'.

June, who examined the bust in her house, also made a commented on the tactile misconceptions that Lynn touched upon earlier. As mentioned above, the hollowness of the original object was an interesting feature for June. When I took the replica to her she was rather disappointed that the replica was half-filled filled and the eyes were blocked. Even though, because of her experience with art materials, she was fully aware of the limitations of the resin replica, this important feature still was not represented, therefore made the information incomplete.

Both June and Peter raised their concerns that most things are designed for appearance purposes for sighted people.

All participants had problem in recognising the parts of the replica, especially the hair spikes and the parts of the broken areas on the neck (where it appears to be broken off from a full-sized sculpture). Both June and Peter addressed the fact that the replica is

made off a material that is very different to bronze without a doubt. It is made to look like bronze, but it is resin and it does feel like resin. A very interesting remark came from Peter in regards to the material of the replica. He was not so much concerned about the falseness of replicas in general and he added that “Because there’s no way I would be allowed to feel the real thing, and in any event the bronze isn’t natural hair, is it? It’s a copy anyway. So, this is just a copy of a copy”. I first did not see how useful this comment is to the study. The original being the copy of a human first took me into a vicious circle of when the ‘real’ starts, but soon after our discussion I realised that this still brings me to a conclusion that this direct replica is not the most adequate way of representing information on the Bronze Bust of Sophocles because it is seen as a copy in a different material. After noticing the same detail that June mentioned about the eyes being filled, Peter’s remark was “And so, maybe, in that sense, this is a misleading representation. Whether that matters or not, I’m not sure.”

During the Tactual Explorations exhibition, long before the current part of the research, some visitors and workshop attendees also interacted with the replica. Some were sighted some had visual impairments. They changed its position on its plinth, took it next to an artwork for comparison and some of the textile students who chose to write about the exhibition as a case study for their coursework took photographs of it to analyse it for their own perception of the exhibition. One common element that joined everyone’s reaction was the material. They considered material to be its most vital tactile description. If we did not provide a sample of bronze at the exhibition, some people who never touched a bronze material in their lives before perhaps would not even notice this difference, but this does not change the fact that there should be better ways to provide access.

5.2.3 Conclusions to the Touching the Bronze Bust of Sophocles

As a result of these exercises I achieved some conclusions that confirmed the answers to some of the questions raised by the Tactual Explorations project. These are:

- ☐ Access in the tactile form is the best option for understanding the Bronze Bust of Sophocles at the British Museum.
- ☐ A better physical access to this object might be necessary, so it becomes more appealing and available to all
- ☐ Direct replicas are inadequate forms of information-representation if they are presented on their own, as they tend to be exclusive and can be therefore discriminative against some people

- ❑ Object without access can turn into an obstacle especially for the visually impaired people, and as a result it would be ignored; this condition of the object is almost equal to not existing.
- ❑ And a question: If replica is better than nothing, should that availability be considered satisfactory?

Although I kept adding criticisms about effectiveness of replicas to my list at the time of these handling sessions, constantly proving this malfunction was not the only reason why I took the replica to people. What I wanted in addition was to be able to feel that I was taking something that was in the domain of an institution and I as a bricoleur could bring other people together to turn it into a better means of communication, and take it back to the institution with this newness. A new state that others took part in shaping. This, I consider, inclusivity.

My journey with the replica and taking it from one person to other has been a complicated one. And by now that I got to know every inch of it over the years, whether it is to study a detail on the surface for art-making or to write about it, I feel obliged to complete this interpretation of the original. In some ways, the Tactual Explorations project served as an analysis of this object. And the thesis is now serving as the analysis of this interpretation; an interpretation that is approaching its final state. Before though, there are still a few points to discover. The next project, Haptic Vision & Tangible Images will do this.



Figure 5-3: Amelia and Peter visiting the original bust at the British Museum



Figure 5-4: June at British Museum, interacting with the original bust



Figure 5-5: June's arrival to room 22 at British Museum



Figure 5-6: Margo's arrival to room 22 with my assistance



Figure 5-7: Peter examining the replica, at RNIB in London



Figure 5-8: June is examining the replica, in her kitchen in North London



Figure 5-9: Amelia and Peter are being given spatial information, at the entrance of the Room 22



Figure 5-10: Lynn is examining the replica

5.3 **PROJECT 3: HAPTIC VISION & TANGIBLE IMAGES**

*"In haptic seeing, all our self rushes up to the surface to interact
with another surface..."*

L. U. Marks, Haptic Visuality: Touching with the Eyes

One of the evidences Tactual Explorations exhibition brought to this research – during the making-of and after its evaluation, is the necessity to bring the ‘missing’ photographic / visual information about the museum object into the tactile description. I came to comprehend that it was important to take a slight step sideways from the Tactual Explorations concept and study the haptic elements in vision directly, and how much tangible information that an untouchable-visual can carry. The aim was to combine the results with the other projects and feed the information back to the thesis. This curatorial exercise explored the ideas of absorbing visual touch on collected photographs in order to support some of the initial questions and assumptions raised by Tactual Explorations project.

The starting point of the exercise was the simple fact that a museum object inside a glass case is a visual object only, no matter how many dimensions it consists of. The dialogue provided is a visual one, and without any supportive interpretation there is nothing else a visitor can do but see, only of course if they are able to see. As discussed in the previous chapters, The Bronze Bust of Sophocles is a perfect example of this.

During the makings of the Tactual Explorations project, the technique behind creation of majority of the artworks of the exhibition involved visual interaction with the photographs of the Bronze Bust of Sophocles as well as its replica. In some cases it was either one or the other set of photographs, and in others both sets of were used. One of these works is my brass etching ‘Surface’; and the another is Deborah Gardner’s ‘Viscid Head’. The common element between these two artworks⁵⁷, as the reader might recall, is how they interpret what is easily seen but could be missed if touched as direct representation is not always the most accurate one. In other words, rather than dealing with direct tactile information, they both question what visual elements could be missed through touch, and in return they offer enhanced representations of this visual information as touchable parts of a tangible artwork.

⁵⁷ Please see Tactual Explorations chapter for full explanation of the individual artworks.

Starting with the same principal, the objective of this exercise is to study the haptic stimulus created on the skin by systematically seeking the tactile cues on untouchable visual information.

Since the type of interaction with the precious museum object in a museum is a photographic one, the methodological act of seeking haptic sensations that images create within us would be most necessary. The aim is not to force-create senses that do not exist, but identify photographic evidence of this type of sensory information already taking place through vision; in other words systematically recognize haptic images. Exploring tactile senses as well as olfactory reception, in the scenes of Brother Quays' feature film 'Institute Benjamenta' , Marks (1997) argues that:

[A] haptic image asks memory to call on other associations by refusing the visual plenitude of the optical image. In addition, because haptic images locate vision within the body, they make vision behave more like a contact sense, such as touch or smell. Thus haptic images invite a multisensory, intimate and embodied perception, even when the perception to which they appeal is vision alone.

Because such experience can be an individual and relative one, generating data for this purpose would require additional input as well as feedback from other people, just as took place in Tactual Explorations. How I approached involving others and realised this as a curatorial study will be explained in the process section below.

5.3.1 Process

To start the project and share others' views of tactile interpretation of visuals, I started a public photography group called Haptic Vision | Tangible Images⁵⁸ on flickr website in January 2009. Images in the pool of this group have been heavily curated and moderated to fit in with the theme; some images were invited by me to the pool, but the majority of them were submitted by the photographers. At the time of stopping the collection, there were 112 members of this group and over two hundred photos in the pool (Figure 5-11).

At this stage I must say that how I link the museum concept of this thesis to tactile interaction with photography is mainly by narrowing down the art making processes that took place throughout the Tactual Explorations project. Rejecting and/or building from some of the available models of tactile interpretation in museums (i.e.

58 <http://www.flickr.com/groups/haptic/>

direct replicas and/or identically-embossed versions in the case of paintings), I refer back to the potential value that photographic information can add to tactile interface of a museum object. In this model artists can include what could be haptically captured from the visual, which is usually ignored when interpreting a museum object for visually impaired users.

As a result of the account above, I decided to briefly step out of the conventional museum as a venue and open my eyes to photographic information in general that I could identify as 'haptic by evoking the sense of touch on the skin without actual physical touch. By this, I do not mean to encourage non-physical touch in any way, but instead I aim to apply our potential capability of haptic-sensing the information to art making process in order to enhance haptic features on tactile exhibits, therefore enhance the physical touch as a result. In some ways this project was created to support the technique used in the Tactual Explorations project by learning about the photographic information and its haptic effects on us.

Although I wanted to leave the conventional museum briefly, I still wanted to stay in the museum conceptually. Therefore I treated the curation process as a selective decision-making in order to achieve a 'collection' rather than an exhibition, therefore opened it to public. The online public gallery is treated as a visual portal for photographs of the touch sense, in the description of a museum; a museum that brings opinions and hypotheses of this research and some scholars together with images of touch from a photograph that potentially contains texture information. Putnam (2001) has identified that there are artists who define their collections as museums, because the word 'museum' can be described as "repository of everything original, authentic and unique", and it "sanctions the importance of an object as a work of art, worthy of preservation". I approached this as a curator, but also as an artist and a researcher (definition of these multiple roles can be seen in the *Methodology & Methods* chapter).

The important purpose these images served in this study was "to provoke other data" (Weber 2008). To stay loyal to the inclusive characteristics of the research, and to create more independent data, I placed a public call for scholars/writers from different background to produce essays for the photographs I selected, by pairing each writer with a photograph and produce this work according to the creative brief that was prepared for this project. The objective was to stay as close as possible to the methods used in the Tactual Explorations project and to create mental touch through descriptions of visual information on surfaces of an untouchable. In this study it was

not my aim to exclude any natural instant feelings or ideas provoked by these images. However it was academically necessary to put this study into a structural method, therefore the writers and I had to be kept within the boundaries of the aims and objective of this project and what it could bring to the thesis as a whole.

Eventually I decided to embed photo elicitation in the study⁵⁹ because of its emphasis on the perception of the individual. Photo elicitation is commonly used in ethnographic research. It involves simply bringing an image or an object into the interview process. When people are presented photographs to accompany an inquiry, they respond differently than to words-only inquiries. Harper (2002) connects this to a physical fact that the sections of the brain that analyses visual information are older than the sections that processes verbal information. He states “photo elicitation evokes information, feelings, and memories that are due to the photograph’s particular form of representation.” By giving special reference to Harper’s (2002) use of photo elicitation method, Weber (2008) argues that:

Sometimes data that are the focus of an inquiry are elicited or obtained through the use of images or objects as memory prompts for writing or as points of departure for semi-structured interviews... Giving people an image or object to talk about sparks multiple reactions leading often to outpourings of all kinds of information, feelings, thoughts, and situation details.

I adapted the photo elicitation to this project in a more controlled way. Instead of conventional interviews, I wanted individual responses to assigned photographs through a predetermined brief, addressing the same properties that Tactual Exploration was investigating. Only this time data would be captured from words that were initially primed by the texture properties of images. The purpose of this method was to link the practice elements of this research in order to come back to and validate the result of Tactual Explorations project.

After shortlisting twelve images from the pool, this random approach of seeking haptic senses in images soon became a strategic search for codes. I paired⁶⁰ each selected photograph with one of the selected writers⁶¹, and briefed them to systematically

59 This also applies to any object-exploration throughout this research; not just photographs.

60 Pairing process gave writers a choice also. To be able to write about it, they had to have feel for the photograph, therefore I sent three images to each writer and ask them to choose one. In some cases

61 Essays along with their chosen images can be found in Appendices

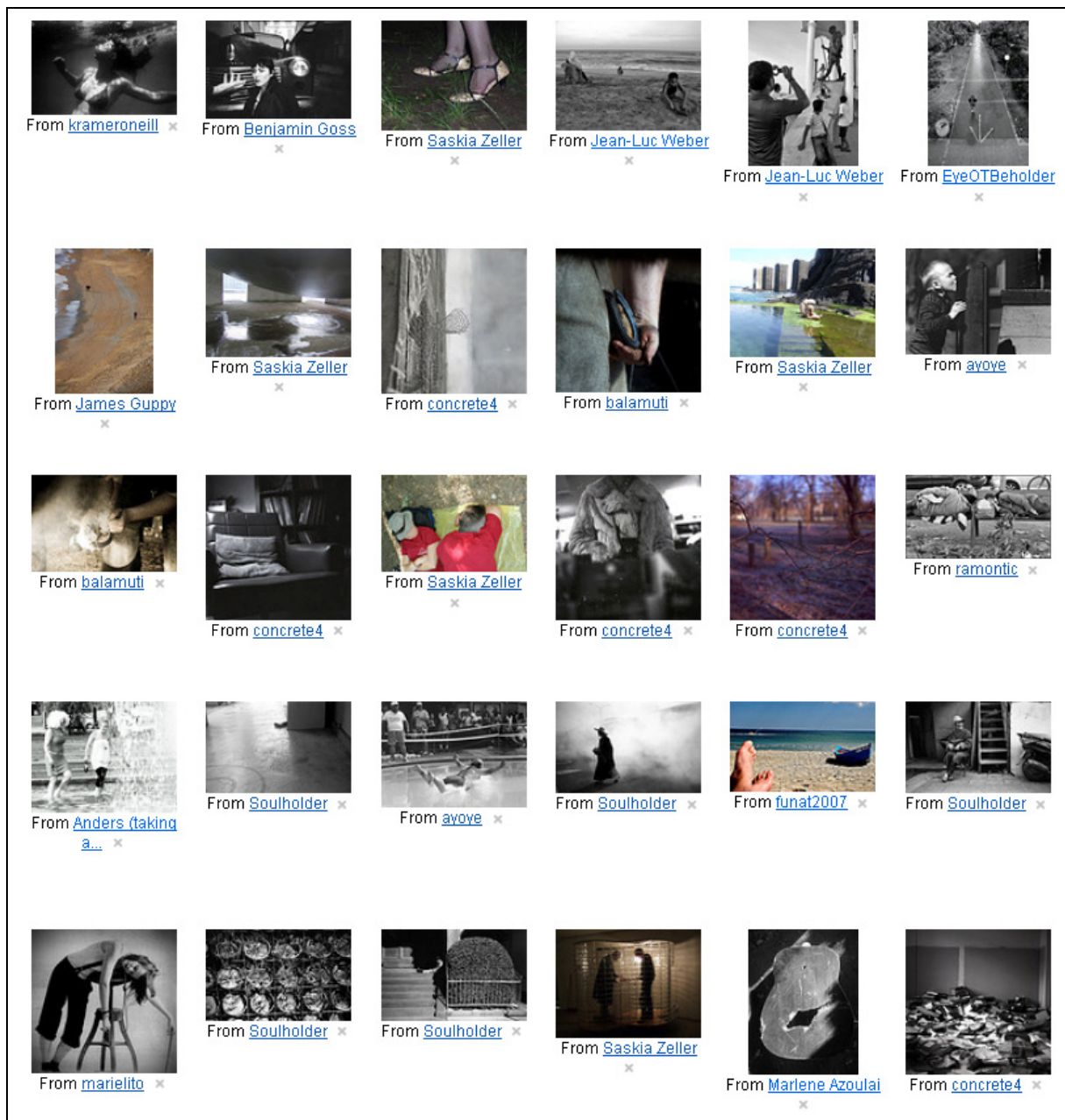


Figure 5-11: Contact sheet from Haptic Vision group, page 1 of 8 (currently)

analyse their given photograph individually, with each being given a special focus to the following points / questions:

1. In what way this image evokes 'touch' on the skin.
2. As an active viewer of this photograph, define in what form 'touch' takes place (metaphorically or physically) on this photograph. Whether I feel I am being touched in this mental image, or I might be the one who is doing the touching; or both.
3. What feature mainly represents the 'physical' in this image?

(Explanation: In order to describe what forms the bodily haptic experience, some or all of the following common properties of tangibility⁶² could be present in the photograph. This could be either as the main feature or a minor/hidden one):

- ☐ Surface texture
- ☐ Shape
- ☐ Hardness
- ☐ Weight
- ☐ Surface temperature
- ☐ Elasticity

As the reader will recall, the texture properties were previously defined for this research for unity and continuity. As it can be noticed by comparing this project to the previous one, the number of texture properties is reduced from nine to six. The reason behind this is to include some form of control and make the message as clear and relevant as possible to the commissioned writers. At the time of working on the previous projects I witnessed people relying on some of the tactile parameters more than others. At the beginning of this particular project it was easy to eliminate pliability from this list for the purposes of the Haptic Vision & Tangible Images project, as it was not relevant to any of the selected images and their existence could result with receiving information that I do not need. In order to introduce further control to this section of the study, I initially wanted to narrow this list down to only four or maximum five properties, similar to the most relied-on ones I noticed at the Tactual Explorations exhibition. Because this aspect of the study was never recorded during Tactual Explorations project, and it was not relevant at the time, I decided to refresh this knowledge by testing it

⁶² As described in "McLinden, M. and McCall, S. (2002). Learning through Touch: Supporting Children with Visual Impairment and Additional Difficulties. David Fulton. London"

through peoples' responses. Although this research is not quantitative inquiry, the democratic choice was sought after. Therefore in order to put these tactile features into a hierarchy; and at the same time open a new dialogue about 'mental touch' concept, I directed a three-question survey that would address these properties as well as the mental touch aspect. The questions were answered by 38 random people, both sight and visual impairments. One of the questions was for determining the list of tactile properties to include in the brief that I would give to the writers. Looking at the results, I decided to exclude vibration, slope and elasticity from the account, however later on I came to a realisation that elasticity was quite important to some of the selected photographs; therefore I put that back in the list before sending to the writers. As a result, six tactile properties were included in the study. Not for the purposes of giving numerical values, but only to illustrate the selection visually I include a simple graphic element in the form of a chart below (Figure 5-12).

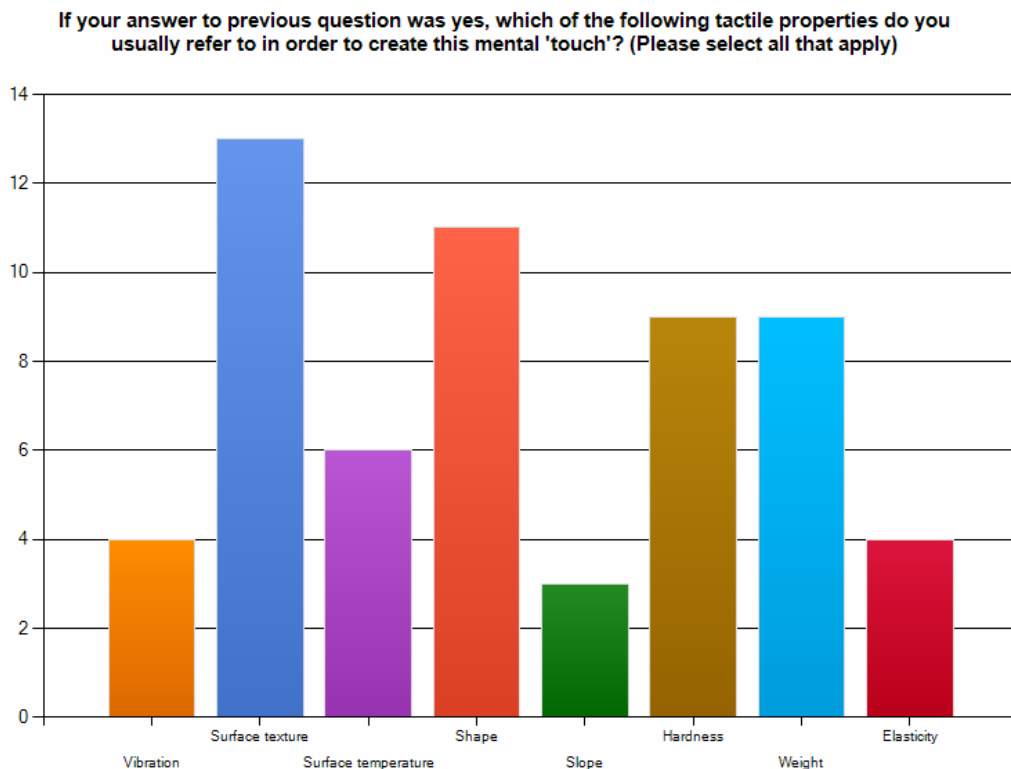


Figure 5-12: Graph showing importance level of all of the texture properties selected by participants

5.3.2 Mental Touch vs. Haptic Vision

Revisiting and taking Marks's argument "because haptic images locate vision within the body, they make vision behave more like a contact sense, such as touch or smell" as a base for this study, my hypothesis was that 'through haptic imagery, haptic vision can enhance the tactile interpretation'. I will take the conditions described here as the conditions of haptic vision. However the possibility that 'it might not always be the haptic stimuli that cause haptic vision, but the mental touch could be too' was an obstacle for me. Because I have the experience of resorting to mental touch during conversations, and only within the recent years I have learnt to differentiate between my 'haptic responses to visual information' and my 'visual response to conceptual information', earlier on in this project I decided to eliminate this potential problem. First, I would like to explain what I imply with 'mental touch' and why I thought it could be an obstacle: I do have a way of converting concepts and definitions into relevant visual objects in my mind to be able to grasp that knowledge; almost like referring to a mental library of objects. Only half-way through this PhD research I came to a realisation that I treat visual information on photographs or film, even painting, differently. Until that point I treated both in the same category.

The account above could be because of practicing the methods of this thesis which has developed my perception, and my haptic senses now take over when I look at a visual image. Because the type of information that I set up to look for in people's perception for this project fell into this latter category, I decided to first find out whether or not other people have a separate mental touch which they have not separated from haptic vision. If so, this could come in between the photograph and their haptic reaction to it. Therefore, before asking other scholars to reflect on my selected haptic images, I wanted to eliminate this possibility that it could be mental touch behaviour more than seeing the haptic element in images that evoked the sense of touch. Although there is nothing wrong with mentally touching objects free from the vision, because the project very much relied on the photographic information, I wanted to personally see the results of this exercise. For that reason I wanted to start with simply asking people if they form a similar material relationship with notions.

My three-simple-question survey first asked to clarify whether they have visual impairment that is not corrected by spectacles or contact lenses. This question was not for statistical purposes but it was aimed to help me understand if there were important differences between the sighted and visually impaired peoples approach and/or use of terms in referring to mental touch. The second question directly asked:

Q: When listening to a verbal description of an object, do you find yourself mentally touching and examining it with your hands in order to form the object in your mind?

The third question was kept relevant to this one, and if their answer was yes to above in any way (as it was kept very open to argument), it asked them to select which tactile properties they referred to in this type of touch. This question was for determining the texture properties which brought the list of six tactile properties as discussed previously in this section. The questions were put on a survey website to provide ease of access, and the link was sent to a couple of organisations. The same list of questions was also sent to these organisations as a plain email in order to appeal to visually impaired users who would not prefer web-based communication. Both the online version and the emails encouraged a dialogue rather than just ticking boxes. Randomly, people responded at different times within a two-week period. This survey generated the following results:

- ☐ 14 of the 38 respondents were visually impaired and only 6 of them stated that they use mental touch. (2 of these participants that answered yes to the question actually described a mental imaging/picturing process, rather than mental touch).
- ☐ 24 of the 38 respondents were sighted and only 5 of them stated they use mental touch. None of the blind respondents use mental touch. One of them replied saying she uses the 'eye of the mind' but she reminded me that this was not same as mental touch.
- ☐ In general, so few people use mental touch and it could only be a habitual behavior therefore is not an obstacle for this research.

At this stage I changed my question slightly to differentiate visual and non-visual information and asked again:

Q: Please look at an object nearby for five seconds. When you looked at this object: did you find yourself mentally touching and examining it with your hands?

Although I do certainly know that I personally do not mental-touch an object if I am looking at it in its actual presence, I still wanted to keep my assumptions aside and have a comparison factor for the first version of the question, so I could cover the basic grounds of this notion. The answer to this question came from 21 sighted people (because of IP addresses shown on the form I could see that the 20 of those were the same sighted people who responded to the same question) and none of

them referred to this kind of touch when looking at an object. Although sample size was not relevant to this exercise as the quality of the answer more important, the number of responses gave me quick proof of acceptance criteria.

As mental touch did not occur as a natural instinct to majority, I accepted that as a go-ahead for putting the rest of the project in practice. In other words it was now possible to take Marks's argument into account and investigate haptic vision as a valid tool for enhancing tactile interpretation through analysing haptic images⁶³.

5.3.3 Haptic vision photographs and essays

After identifying the twelve photographs from the pool of over a hundred, I selected twelve authors who applied to the project after my call for essay writers. The call also mentioned a potential photobook project that could be the result of this experiment in the future. The selection process took over one week, as there were many applicants with differing expertise and backgrounds. I wanted to create some kind of harmony in the allocation process through what I see in a photograph in the first place and who would be most appropriate to generate the best analysis of texture details from any given photograph. However a direct selection would be unfair and leading, therefore I gave the option of selecting two (first choice and second choice) photographs out of three, and allocate them on a first come first serve basis. This way everybody would get the opportunity to have a say in which image would be best.

Each writer approached their photograph with an independent uncontrolled style. They have proposed their intentions before writing the essays. Fiona Candy, a fashion designer, whose research investigates clothes impact on body and the way body communicates with the outer world through this medium, selected a very appropriate photograph that includes an image of a man's body hidden under fabric (Figure 5-13). Although my three options of the photographs that I presented to her were quite selective, it was comforting to see her deciding to pick this photograph and therefore stay within a medium that is close to her domain in so many ways. This image affected me with haptic experiences of comparing soft fabric against the skin in relation to cold tiles under the feet therefore creating an interchangeable feeling of warm and cold depending on the area I looked in the photograph. Fiona describes her process as:

⁶³ This is not a general comment; it is specific to this project to support artwork creation techniques through photographs in Tactual Explorations project.



Figure 5-13: Fiona Candy's selected photograph by Saskia Zeller



Figure 5-14: Michael Szpakowski's selected photograph by Emma Bennett

I viewed the image on screen and printed it onto paper. I noted down my initial reactions very quickly in the order they seemed to come to me. I later returned to each section to 'stitch' and 'embroider' more words into this first flimsy framework. I looked intently at the image, but also closed my eyes often, to do some body listening and visualisation, to track down where the various sensations were coming from.

Fiona Candy, knowingly or unknowingly, brings new insights to this study. Every sentence read addresses a stimuli and after it turns into words, it creates a new sensation on the skin, just like the project intended. She refers to tactile descriptions and representations such as:

I sense the breeze from the open doorway behind acting on his skin. A shiver. The sole of my left foot (not my right) feels the coldness of the floor and from somewhere I experience a shuffling, skidding sound of contact.... This touch is not received directly on my skin, but it is in my body, at my shoulders, and then down my back and arms. As well as textured, the towels are heavy and slightly clammy underneath.... There is a sense of mania, paranoia or trepidation.

Michael Szpakowski on the other hand defines what's there in the first instant, the obvious foreground combined with claiming the territory of the conditions that created it in the first place rather than what it makes him feel like; however as a result raises the haptic sensations through memory. This is different than mental touch we looked at earlier. The inspiration comes directly from the object, memories are introduced after following the haptic stimuli. He refers to very deliberately distanced comments, but somehow still manages to draw a haptic image. His descriptive comments make the reader (and the spectator of the image) into the position of camera (or the photographer). His description states:

The angle of the photograph (which both visual inspection and guess work and trig suggest was taken from about the height of a 9-10 year old child) creates a kind of skewed grid with the edges of the boards.

From the definition we see evidence of the photograph affecting him tactually, although he cannot help associating with childhood memories with every splash of this tactile feedback. Towards the midway of his essay, he starts to get more comfortable with the photograph and brings one of these memories straight back to the image and gets immediate sharp "splinters in the hand" from the floorboards.

Zeynep Dagli, in her selected image (Figure 5-15), receives the sensation of weight over her skin from the stretched fabric. She associates this with repression and defines her eerie state that this image puts her into:

The more I stare at it the more I become aware of the pressure on the cloth and the uncanny feeling that is created by it. The image forces/informs me



Figure 5-15: Zeynep Dagli's selected photograph by Lucas Compas



Figure 5-16: Gillian Allison's selected photograph by Ben Grillon

that there is something to conceal, remain hidden, kept from sight, not to be seen or touched but it still touches and disarms its viewer...Darkness for the man under the cover, darkness for the viewer. What remains is the 'secretly familiar' texture.

Gillian Allison approaches her photograph straight-away with references to bodily haptic experiences. She describes these not only from her point of view, but she then swaps places with the person inside the water which is the main element shown, and starts feeling these sensations from that character's body:

There are also hidden tangible properties in the body of water .One can imagine exited insects fleeting round the dank environment teasing the water with brief bombardments which cause vibrations on the surface that penetrate the skin with a tickling sensation. The light breeze inducing a lapping effect on the surface of the water which dances playfully off the skin with gentle slaps.

My intention of selecting these photographs, apart from my own instant haptic reaction to them at first sight, was mainly their visual description of texture and how it directly creates sense of presence and sense of touch at the same time. When Fiona Candy defines the heaviness on the towels, or Michael Szpakowski defines the splinters from the floorboard, it confirms my own reaction. I refer back to how I created the 'Surface' piece based on the Bronze Bust of Sophocles; and although this was not a defined method then, I can see the transition into a method of filtering haptics from images and representing this on tactile versions of it, rather than creating direct embossed replicas. Surely, as seen in the Tactual Explorations project, and as discussed in the Critical Discussion & Analysis chapter, without the interpretation, direct replicas or embossed copies of other works do not necessarily convey the truth. In other words, the question could be: can we enhance information through haptic vision, in order to produce tactile interpretation both for the sighted but more importantly for the visually impaired people as they have not got access to this visual cue in the first place.

5.3.4 Conclusions to Haptic Vision and Tangible Images Experiment

This experiment served the purpose of testing a basic however important hypothesis that was raised by Tactual Explorations project. At the time of making the artworks for Tactual Explorations, some of the artists including myself worked with the photographs of the Bronze Bust of Sophocles to re-interpret the original bust tactually. The common element of these artworks was the exaggeration or enhancement what could be seen easily but couldn't be felt through touch on the replica object. This process involved resorting to haptic vision. Within that project it was already concluded that filtering haptic information from the Bronze Bust of Sophocles through photographic

information was a valuable one, in order to achieve a better tactile definition. However, it was necessary to test whether or not this method of looking at visual information for haptic stimuli could be better exercised by involving other scholars or artists, on other visual images, in order to keep the interpretation inclusive.

The exercise helped me and other artists/scholars to reconsider haptic values that can be present at an image. If addressed methodologically. Photographs were seen as the best media to study for this purpose as they reflect human sight and produce information that is initially visual only. Readers should note here that it is not my intention to underestimate a broad subject like haptic vision and draw general conclusions to be applicable to all fields. However, I do define this exercise as a potential method for highlighting and addressing texture properties on a museum object, as part of an interpretation.

CHAPTER 6: Critical Discussion & Analysis

Overview

I dedicate this section to voice some of the arguments and an overall analysis of these ideas that were formed throughout this research. Most of them take their root from my practice but has connections to the Literature Review, yet in some ways they do not belong to any of those chapters in the thesis, due to being represented in the realm of a separate discussion to the rest of the discourse.

This is not a conclusion chapter; it is kept short, and it can be viewed as a link between the rest of the thesis and the conclusion chapter.

6.1 TO MAKE, TO MEAN

The practice elements of this research deliberately moved away from searching the ‘meaning’ of the object within its conventional (historical or philosophical) context, but instead focused on delivering interpretation on the surface/texture details and how visual information could be represented tactually. This does not mean that the research has not been engaged with the quest of a valuable ‘meaning’ in recognising reasons and performing actions. It must be said that in the early days of the study this declaration of keeping away from the object’s meaning felt like a dangerous attempt -considering this is a research about interpretation - however in actuality this move brought the study even closer to the object. Myself and the participants, at times obsessively, focused on the details of this object to be able to convey it through an interface to enhance physical access. An interface can only be as good as what it is able to represent. The meaning in that sense always was hand-in-hand with making. This kept in mind, the four projects of the thesis brought the interpretation to today. In fact, the whole thesis is about achieving this information adequately. It keeps the human element in the foreground, and invites others to not only participate but also make use of its knowledge to date.

At the making of the artworks, visual information was confirmed by sight and touch - in some cases by touch only, then used as material to re-interpret the object through artworks as tactile components of a complete tactile interface to the original. Discourse such as object’s presence and touching/existing relationship was applied throughout the art-making as well as project-building stages, although not necessarily with direct relation to the history or the persona that the object represents. That being said, some referral to this information was made outside the discussion. For example I give a brief introduction to the object’s history in the thesis, and one of the essays in the exhibition booklet resorts to Sophocles’s place in history as a dramatist⁶⁴ to highlight a reference to sight and blindness in his tragedy ‘Oedipus the King’. In other words, artworks and the discussion were not affected by the character of Sophocles unless it was relevant to what is physically available on the actual bust (i.e his hairband associated with status and wisdom)

64 After the artworks were created for the Tactual Explorations project, I have produced a job brief for writers, and requested essays and reviews of the artworks for the ‘work in progress’ booklet (please see Appendix 5). At this time, it was important to reconnect with the main object, therefore writers were encouraged to work not only with their imagination but also the conventional meaning / interpretation of the main object.

At this stage now, I see it necessary to bring in some of the notions that took active part in the thought-process:

6.2 PRACTICE OF TOUCH & 'CONTINUOUS' HUMAN

This thesis started with a quote from Irigaray (1996) in part of which she reminds us that “everything is given to us by means of touch, a mediation that is continually forgotten”. This remark tells us that the origins of us is not removable from touch just like our origins are not removable from us. In the same quote we were told that “we regress and progress, way beyond all sense of sight”. Although Irigaray is not necessarily suggesting replacing sight with the sense of touch, more essentially, she is stressing our position within the concept of tactile origin. This origin and progression is what I refer to as the ‘continuous’ human element throughout this thesis. And the tactile origin is what I take as base when accepting the sense ‘touch’ as an unquestionable and undeniable sense. From this acceptance, I enter the practice of touch in order to solve a research problem; perhaps in some ways I am seeking the origin, or following the origin, or even using the origin as means of exchanging information.

As seen earlier in the chapters explaining practice and methodology, an inquisitive touch has been dominating this research. The ‘realm of the tactile’ that Irigaray suggests also deals with inquisition. Here, I am not going to argue that the tactility is the feminine domain. For the purposes of this research I do not see it necessary to give the visual domain to men and remain strongly within the tactile one as representation of the motherly nature. However, as a female researcher, and more importantly a bricoleur of practice and theory, I will locate my belief in the feminine subjectivity of the tactility of the womb as origin of being, in the maternal context, in order to get a step closer to Irigaray (1996). This helps me declare a starting position.

Practicing touch begins with accepting that we all come from an origin that is touch-based. Once seen as an unchangeable human-condition, this acceptance brings a sense of inclusivity to the topic. What I mean by this is, by taking a human sense that is excluded from the origin of the problem (the untouchable museum object), and apply it not only to the research process but also to the act of communicating with people involved, the problem itself become accessible to more people. Inclusivity is not only about meeting a set of needs, and certainly not a challenge that must be overcome. Inclusivity is an embodiment that can be formed through bespoke implementation; and could only be improved by good practice along with the involvement of others’

input in a project, whether it is in the form of a thought-process, or an artistic technique.

What we touch also must be discussed in this light. For Derrida (2000 [2005]) touching, considering touching, and the motivation that kick-starts this consideration to touch are all related tactile experiences. In touching the glass case of the Bronze bust of Sophocles in the museum, we also touched our experiences and memories as well as the untouchableness of the object. We touched a barrier, and this barrier touched us. The object inside did not change in its physicality in anyway; however we entered a new condition, and this new condition defined us as being in a new state of not-being-able-to-touch. This state left us with anxiety and dissatisfaction. I, as the researcher, took this dissatisfaction on board and addressed it as a research problem. The Tactual Explorations project was born as a result of it.

My application of practice of touch should not be associated with the spiritual doctrines. In practical terms it involves consideration and/or application of touch, as a method or technique, in every aspect of this research project. I touch the materials for art making, I touch my participants for togetherness in exploring the untouchable or its copy, and I watch them touch the artworks especially created for this research. Because my research is about discovery through action, methods that support this making are met under the bricolage of tactile ideas and styles. Irigaray's truth comes from the tactile (1985). An element of truth could be brought to my inquiry with the application of this practice. I will attempt to explain this concept of tangible truth within some familiar, however unusual, territories.

6.3 THE LONELY OBJECT

The act of touch starts from the moment we want to touch an object and this urge to touch may start as soon as we think of or notice the object. We touch with our eyes if we have sight and we touch with our thoughts regardless; then the thought touches us back (Derrida 2000 [2005]). Our skin touches emptiness, too and this emptiness that surrounds us is a physical space. These are some of the existential evidences to the fact that touch occurs all the time. However only the physical touch can give the satisfaction required, if the aim is to feel an affirmation back from the object. Both the inquisitive and instructive type of touch, as identified to be the types of touch dealt in this research relies on this feedback.

The results of the *Touching the Bronze Bust of Sophocles* showed us that an object presented inside a glass case can be an obstacle for blind and visually impaired visitors. The person who can see it gets into a dialogue with it through touch. A dialogue perhaps rather incomplete. The person who is not able to see loses out on this category too, therefore the object becomes unattainable. Because its aim is not met, object becomes a thing and this is a disqualification in many ways. Forming his theory from Heidegger object and thing relationship, Brown (2001) argues:

We begin to confront the thingness of objects when they stop working for us: when the drill breaks, when the car stalls, when the windows get filthy, when their flow within the circuits of production and distribution, consumption and exhibition, has been arrested, however momentarily. The story of objects asserting themselves as things, then, is the story of a changed relation to the human subject and thus the story of how the thing really names less an object than a particular subject-object relation (p4).

Before embarking deeper on the ideas of others such as Brown's 'thing theory', which is complex in itself, it seems important to point out here that it is not my attempt to deconstruct philosophers such as Heidegger, Lacan and Baurillard all of whom theorised endlessly about the object and the thingness. Instead, I propose to focus some of Brown's ideas synthesized from Heidegger's object/thing dialectics to support some of my conclusions. I will not enter the domain of the 'self' and will stay away from analysing some of the metaphors presented in this theory. I will only take what I consider to be purely relevant to my argument, and stay true to the understanding of the thing and object concepts I believe to have developed in this research.

If they were on a stage, being pointed, the selected museum object would be the 'object'; then the 'thing' would be the museum object's new state after the definition of its unattainability, inaccessibility, untouchableness etc. Perhaps by becoming a thing, the thingness of it gains a new place in the philosophical significance; however it is the loss it encountered is what must be addressed for the sake of this research. I am not proposing to glorify an object, nor promoting its cultural importance with arguing for the need for 'meaning' in this discussion; but instead I am showing my interest in the physicality of it, therefore how it could be accessed by many. At this stage, the 'interpretation' enters the subject briefly, but importantly, as this interpretation can choose to fortify or hinder access. However, I say briefly because I do not wish to involve the concept of order of objects within a museum, what Brown (2001) calls a 'grid'.

If there is a condition for what happens to an object when it loses its access, surely there has to be a condition to lift it up also. By providing a tactile interface to solve the

problem, what the interpretation tries to do is gain back this access. However it must be noted, when looked from this perspective of beings, the interpretation itself can also be considered an object, even though it is formed of a set of artworks. It is the mission attached to what defines this state of being as an object. In other words, an object becomes a bridge to understanding another object. Kaplan (2006) provides a solution from the most unlikely domain and brings it as a theory for this problem-solving. She provides 'fetishism strategy' as a key. "The need to transform something unfamiliar and intangible into something familiar and tangible is one of the major principles of the fetishism strategy" argues Kaplan (2006, p. 1). 'Fetishism strategy', unlike fetishism does not relate itself to any sexual perversion, instead focuses on objects without glorifying them.

Since it was made clear that I do not aim to glorify the object in any way, perhaps there is no urgency in stating it, but just to clarify, by using the 'fetishism strategy' in my thesis I do not encourage worshipping objects either. Neither the museum object nor the object of the interface gain additional roles; they remain on their true selves.

How Kaplan proposes 'fetishism strategy' is by first addressing the notion of familiarity. She takes the object from the fetishist, and brings it to any ordinary person and offers it as the symbol of truth and familiarity, something that person is very comfortable with. Kaplan refuses fetishism in its ordinary sense because it promotes falseness. However, the difference in 'fetishism strategy' she explains that "holding on to something familiar is a good way to approach unfamiliar" (p.2). She uses the metaphor of using a comfort blanket to access the unknown and hold on to it until the confidence grew. With this, she argues that something tangible, something that can be felt and known brings assurances to people. In so many levels, what Kaplan is offering is an interface to information; and this interface offers access to knowledge that is beyond the interface but needs it to be accessed through it; something bigger than itself. This proves a vital point in theory which practice itself achieved earlier in this thesis, that a tactile exhibition as an interface is a valid formation.

In this brief argument, I defended the object's importance and the access to it. I used Brown's thing theory to address the problem and introduced Kaplan's 'fetishism strategy' into the picture to justify the interface. Now I will talk about the problem with direct replicas before moving on to the conclusion chapter to bring all the chapters of the thesis together.

6.4 PROBLEM WITH DIRECT REPLICAS

Perhaps providing a replica of a museum object would preserve the original, but what would happen to the actual visitor experience? Would those who could not see the original in the first place get a fair deal? And more importantly, does a direct replica always present the most accurate information?

I argue that by touching a direct replica, we somehow touch a substitution or even deceit. This is a preconditioned condition. Even though a direct replica is also a real being (as in 'not virtual' or 'not thought-based'), it gets its value from directly copying something. And this value pretty much relies on how good it copies the original. Whatever this value is, the notion of a replica comes with its falseness. When we touch the collective artistic interpretation as an interface to the original (i.e. the Tactual Explorations exhibition), the intensions of the presentation becomes clearer. This artistic interface tends to hold honesty. It does not pretend to be the original or a substitute for the original; it presents itself as a bridge to the information on the original.

The surface of a museum object that is kept in a glass case will stay the same, or change so little in time because it will not be touched; at least not by many. A replica museum object on the other hand would be made available to visitors for tactile examination therefore its surface could be open to change. Even if we leave whether or not this could be a complete solution a side for a moment, aren't we left with questioning the accuracy of this change that is represented on the replica but not on the original? If the most basic condition of being a replica is 'being same', surely some things start to appear blurry in this picture. Even an accidental sameness cannot form identity (Lewis 1982).

In the definition of direct replicas, I also include identical embossed versions of images or sculptures that are placed beside a museum object as access solution in this category. Topografik⁶⁵, a UK-based access design company supplies tactile interpretation to some of the biggest institutions in museum and gallery industry in the UK. For instance, when Weston Park Museum in Sheffield hired Topografik for tactile interpretation of a landscape painting, the result they presented to the museum was a bronze embossed cast of a horse-car carriage detail directly from the painting. Although it is a one step

⁶⁵ <http://www.topografik.co.uk/>

further than creating an identical, the representation of the information still was in the form of a replica. In my thesis I do not refer to direct replicas or identical embossed products as 'interpretation'. I simply call them replicas, or copies, or detail-extraction. For the purposes of my research, a tactile interpretation should add a personal and/or artistic touch or a theory in order to become something more than a copy.

Widely and inaccurately, most sighted designers who create experiences for visually impaired visitors base their design solutions on the assumptions of a sighted person. For example they naively believe in the fact that blind users would have no problem in recognizing the texture and contour information on three dimensional direct replicas. Recognition of the contour of objects is not same in every blind person. When a student who's been blind for only four years was presented with an apple-shaped cut out with a thin projection at the end to resemble a stalk, his teacher expected him to recognise an apple straight away. However to the teacher's surprise the student could not come anywhere close to identifying this object. For the student apples were now identifiable by their distinctive taste, their sharp smell, and the smoothness of the shape as well as the texture. The represented stalk and the direct cut-out of this apple, in his "sightless" world, had no role in describing this fruit with an actual representation of its physical feature (Pearson 2003).

Artworks of the Tactual Explorations project do not aim to duplicate direct or create resemblances. They each highlight a texture property (or a set of properties) of an object and make their artwork about that property. The end-result is for everyone regardless of having sight or not. Pearson (2003: p.41) argues that "[t]he belief that blind people literally must feel every roof tile and bump in the road to appreciate the metaphoric 'feel' of a market square is a mistaken one".

When designing museum exhibitions for visually impaired visitors, types and degrees of visual impairment should be taken in to account. Apart from statistics about different forms of visual impairment, how a person reacts, chooses to manage or is affected by their own disability will also define whether or not the exhibit's information design is a success for them. Therefore a tactile interpretation should accommodate as many optional features as possible. A direct replica cannot achieve this unless it is presented as part of an interface.

One of the biggest obstacles for some visually impaired people when it comes to observing large objects by touch is, not being able to accommodate the object in their

hand. Once the area to touch gets bigger than the holder's hand, visualization, and imagination begins, therefore it gets more difficult to sense the object's entirety (Peter 2004). In the Tactual Explorations format, as an inclusive approach, a scaled-down copy of the main object was also included within the interface. This optional and multi-exhibit approach makes the Tactual Explorations project more accessible.

CHAPTER 7: Conclusion

Overview

In this chapter, as well as giving an evaluation of the creative research process, I also reflect on my actions as a researcher and evaluate my approach to achieving the main objectives of this research. After a brief summary of the thesis, I state the contributions to knowledge. Discussing my discoveries during the investigation I highlight the major relevant steps that took place at various stages of the study as well as its limitations. With this chapter, I also clarify my roles and present future prospects of this research.

7.1 BRIEF SUMMARY OF THE THESIS: RECAP

With the aim of gaining further understanding of touch as a concept, this thesis, in general, has argued for the involvement of artists and participants in the re-interpretation of museum objects through a new format of a tactile exhibition that aims for a more accessible object interpretation. This argument led to the need of analysing a type of exhibition that offered touchable artworks that focused purposefully and only on the physical and tactile qualities of a selected museum object. Because such an exhibition did not exist, Tactual Explorations project was brought to life both as a concept and a real-life public event which formed an appropriate case-study for my research. The exhibition format was presented as an interface between the visitors and the museum object, and the concept of it was supported by side projects and experiments as explored by the previous chapters.

The Bronze Bust of Sophocles from the British Museum was selected to be the object of the Tactual Explorations exhibition. This project, which was also identified as the major outcome of the research, consisted of artworks that were created in response to an artist brief that focused on the texture properties of this museum object. These object properties were generated from previous academic research on tactile senses and were converted to sub-questions in order to collect data. The tactile exhibition also provided workshops in order to engage with visitors.

While the physical result of this inquiry was the Tactual Explorations project, the main theory behind this work followed the idea of opening up the concept of touch to further discussion, and most importantly to bring people back to museums through this sense. In order to achieve this aim, the thesis followed my creative practice of touch which involved analysis and documentation of my research behaviour, as well as the participants' reaction.

7.2 CONTRIBUTIONS TO KNOWLEDGE

The primary contribution to knowledge of this thesis is to demonstrate the value of tactual interpretation of visual information in museums through methodologically produced exhibition pieces, in the form of a tactile exhibition as a tactile interface. What makes this physical interface different than other tactile museum aids currently available is, that it is neither a direct replica nor an embossed representation; and it focuses only on the object's texture-description rather than the meaning or the history

The research also addressed the missing tangible element associated with rapidly developing haptic technologies that are applied to museums, and re-introduced the human aspect to interpreting texture information. This was done by replacing the tactile information which was missing from the haptic simulation of the Bronze Bust of Sophocles with conventional artworks created especially for this research. Collectively, these physical artworks along with the haptic simulation formed the tactile interface. As a result, rather than being the main aspect, haptic technology was treated only as another medium in the Tactual Explorations exhibition. By involving artists, writers, volunteers, participants (visually impaired and sighted) and spectators as in producing and/or analysing these works, an inclusive approach to re-interpretation was introduced.

Whilst inquiring after ways to achieve an accessible museum experience, Tactual Explorations exhibition enabled people from diverse backgrounds to come together to explore one famous museum object. The Tactual Explorations as a format was presented as adaptable to most museums and their special activities. By encouraging the real presence, this project addressed the need to bring people back to the museum-location through touch and investigated the topic through creative practice of touch.

7.3 OUTCOMES & EVALUATION

As a result of this study, a distinctive conclusion was revealed... this is that the Bronze Bust of Sophocles which is currently displayed at the British Museum can be best explored through touch; and neither its current display system nor its direct replica provide the same valuable texture information as the Tactual Explorations format.

The main product of this thesis on the other hand, is the Tactual Explorations exhibition as a design solution in order to create more accessible object interpretation, especially for blind and partially sighted visitors.

Following the chain of questions and answers listed on the Introduction chapter, a main research question was posed: Is it possible to achieve an accessible object interpretation via inclusive exhibitions as interface between museum visitors and a museum exhibit? This question was tested and its possible outcomes were analysed through the Tactual Explorations project.

This project was then supported by a curatorial study called Haptic Vision & Tangible Images. This side-study was based on the concept of gathering tactual senses from

untouchable visual information (in this case a set of photographs from a purposefully created online gallery). In order to study the texture properties that potentially exist in a photograph, the project focused on the questions that were generated or addressed by Tactual Explorations. To be able to test and/or validate results, the project invited a number of scholars and artists to describe these tactile properties against some predetermined questions that are described in the *Projects* chapter.

In order to re-establish Tactual Explorations' role within this research and link all of the practice work by testing and observing real-life scenarios in the British Museum (in the presence of the Bronze Bust of Sophocles; and with its replica outside the museum), a final practice element took place. I identified this practice element as the Touching the Bronze Bust of Sophocles. For this part of the study I invited a small focus group of visually impaired people to British Museum and observed their interaction with the selected exhibit.

On the early days of the inquiry, the boundaries of this research were carefully set, especially by clearly defining 'what this research is not'. These points were raised in light of the potential misunderstandings and/or expectations that a research in a similar topic could possibly create; as well as from eliminating from the inquiry of results and objectives that were already achieved by past research. For instance, this research did not aim to bring a new depth of understanding to blindness or visual impairment; nor it did search for new policies or legislation.

It was not in the objectives of this research to offer any design solution as a replacement to current museum interpretation, nor to how people physically visit museums. In this study actual physical presence at a museum venue is never ignored and virtual visits are not encouraged. The 'do not touch' policy of the museums is taken as a valid rule and the solution was generated with this rule in mind instead of arguing the opposite. However, the history and the reasons behind this policy were discussed in order to validate the need for this study.

My research is relevant at least for three particular uses: By forming a case study, it becomes relevant to information designers who would like to link their expertise to tactile interpretation in museums, or more specifically to the design of tactile exhibitions. It is relevant to museum curators who would want to step out of their current practice of involving artists with their exhibitions and instead focus on tactual interpretation through artists' approach to their brief. This research is also relevant to

prospective PhD students wishing to combine qualitative methods with a performative research paradigm in their practice-led research projects.

7.4 MAIN RESULTS

This thesis offered an interface in the form of an alternative tactile interaction between the museum visitor and the museum object. The first user-feedback experiment of this research involved sighted people only, and showed that visual information can be interpreted tactually with the help of a physical interface.

By introducing the haptic technologies as a medium to support conventional artworks that focus on texture properties of the Bronze Bust of Sophocles, this thesis also enabled a new type of access to traditional art-form. Through this approach, Tactual Explorations project brought the interpretation of this precious exhibit in British Museum to visitors living away from the museum without limiting the physical access. Two types of touch were addressed to support the interpretation in terms of access to the art: an inquisitive touch and an instructive touch. Whilst both the art-making and curating processes were identified as inquisitive touch, the workshops presented at the event addressed the instructive touch as a type of touch that enhances access to a museum exhibit

As a secondary result of Tactual Explorations project, the significance of sight in describing tactual properties became very strong. Therefore a shift in focus group became essential. For this reason an online gallery of images was curated in order to study photographic evidence of tactual senses and the representation of tangibility in visual information on a set of selected images from this pool. This required a conversation with scholars and artists, with special attention to the tactile elements on these photographs. Twelve images were selected from this collection and each photograph was paired with an author. These scholars were asked to write individual essays for their given photograph, in order to generate data for identifying tactile elements in untouchable objects.

Both with Tactual Explorations and its supporting project Haptic Vision and Tangible Images, this study provided access to an object's tactile information by gathering photographic information from this object and reinterpreting tactually.

Due to its low budget, the Tactual Explorations exhibition and its amenities such as free workshops were available only for the duration of eight days; however the positive

feedback received from the public, special-needs schools and local press made it apparent that even with small budget it is possible to offer accessible and inclusive experiences to everyone regardless of their background and needs.

One of the biggest obstacles for some visually impaired people when it comes to observing large objects by touch is, not being able to accommodate the object in their hand. Once the area to touch gets bigger than the holder's hand, visualization, and imagination begins, therefore it gets more difficult to sense the object's entirety (Peter 2004). This thesis, along with its main project Tactual Explorations addresses this issue also, and provides artworks that are easy to hold in a palm as well as the larger ones in different forms and dimensions⁶⁶.

The projects realised through this research brought together artists and scholars from diverse backgrounds and enabled new work and concepts for them. Each person that was involved in these projects was seen as the participant of this research, and received at least one form of benefit from their participation (i.e. were credited in the published work, established future connections, exhibited the commissioned work at other exhibitions and included this work in their talks and presentations.)

Tactual Explorations made a difference by:

- ☐ Explored the main and hidden aspects of 'touch' in an object that is exhibited visually.
- ☐ Provided options for people with limited or no sight to have access to art exhibits;
- ☐ Incorporated haptic technology to enhance access to traditional art-form

7.5 HOW DID TACTUAL EXPLORATIONS AFFECT THE PARTICIPATING ARTISTS

Even though each artwork were developed and created directly and purposefully for the Tactual Explorations project, artists took their work further by either taking it to other exhibitions or presenting at conferences. The theme of Tactual Explorations also gave them new insights for their future work⁶⁷.

⁶⁶ For example, Murat Ozkasim's rapid prototyped palm-size replica was preferred by some of the visitors to the direct replica of the object.

⁶⁷ All quotes in this section are from personal correspondence with artists.

The project led to Tom Ainsworth's works being exhibited at a second exhibition 'Safe to Touch' in Lincolnshire. He still keeps the artworks in his possession for potential future use. The first workshop of Tactual Explorations, Drawing by Touch, was facilitated by Tom. His views on the outcomes of this workshop for him are:

The workshop that I ran helped me to further develop the theoretical framework behind my practice. Working with other people to expand and explore ideas, through drawing and focused conversation, helped me to recognise the value of what I had to offer as an artist and to develop my own ideas further.

After Tactual Explorations, Tom started a PhD program with University of Brighton working on a collaborative project with Brighton and Sussex Medical School and the University of Brighton, Faculty of Arts to develop handheld exercise devices for rehabilitation. He states "participation in the Tactual Explorations exhibition was one steppingstone in my progress towards this project".

Deborah Gardner also agrees that Tactual Explorations had a big impact on her work, especially by making touch the "central experience of the exhibition". She considers her participation at Tactual Explorations as an "opportunity to explore how we experience form through touch". She finds such exploration greatly relevant to her artistic practice.

Lynn Cox took her piece that she created for Tactual Explorations to other events, exhibited it at number of exhibitions and gave talks using it as an example. She is planning to use this artwork as a basis for a future residency project involving 3D lines. She articulates that the project overall affected her art practice by confirming "the importance of touch and how the feel and look can be different".

Megha Rajguru had never worked with tactile objects before Tactual Explorations. This project helped her develop another work that explored the importance of physical properties of material. She still keeps the original artwork that she created for Tactual Explorations in her living room. Also, she took the photographs of this piece to a number of seminars and gave talks about it.

7.6 RESEARCH BEHAVIOUR & SYSTEM OF METHODS RE-VISITED

Through a bricolage approach of combining research paradigms, I presented a research that reflects an interpretation through practice. I also illustrated my practice and its realisation through my separate roles as part of the study.

This practice was defined and located within the collective operations of an information designer, artist and a curator. As a curator, my practice involved experimental work, artist-commissioning and exhibition design with specific reference to information design. As an artist, I collected data using sketchbooks/notebooks, taking photographs, and creating exhibition-specific artworks. My hands-on work also included tasks such as laser-scanning the replica bust for the creation of a haptic simulation.

At user-feedback exercise and the other projects of this research, some data came from the user directly; either by surveys and questionnaires or through some unobtrusive observations of their actions. All acts and creations were photographed, and in some cases they were documented by video. Data analysis was mainly interpretive; all numerical or statistical results were used only to support the results in qualitative ways. The writing-up process was also treated as part of the practice.

Apart from the inquiry being practice-related and participation-focused, none of my methods were established as set-in-stone decisions in the early days of my research. Instead, together with the development of my practice, I identified problems and moved towards diverse methods in order to perform some of the unobtrusive and unrehearsed tasks that the research brought at times. “Being a slave to method is not a consequence that works very well with visual arts where eclecticism, ingenuity, and pragmatism make better companions” argues Sullivan (2005, p. 214). I believe this kind of flexibility helped my research take shape in a more creative way. For example, if I had not moved my inquiry out from control environments into real-life situations such as the Tactual Explorations setting, I would not have got the chance to acquire appropriately valid data about unexpected situations that can occur in public exhibitions. In addition to this, I also would not have been able to reflect on being on the driving seat of creating an inclusive public event

7.7 RELEVANCE & DIFFERENTIATION TO PAST RESEARCH

Because of the multidisciplinary aspect of this research, I did not focus on one particular scholar or project especially. Instead, I directed my attention to concepts and formats that were available in order to analyse the need for my research and locate it in the academia. However I acknowledged the thoughts and ideas of others who influenced my work; and also identified some project concepts that are similar to what my research offers, but illustrated their differences.

Previous research has already investigated and proved artists' positive contribution to society; and it is not unusual to see museum curators to invite artists to take part in special events and exhibitions within the museum setting. Just like in other museum events, the aim of these exhibitions is to attract or bring back the visitors to the museum. In some cases artists are included in the interpretation of the object, however these involvements encourage artists to bring out their artistic inspiration or technical approach; the artworks are not directly focused on tactile elements on the surface of a selected museum object.

Including touchable artworks or providing handling sessions for visually impaired exhibition visitors is today a common practice at museums. However these handling sessions are limited to selected objects and/or replicas only and they do not provide access to most precious objects at museums.

Tactile exhibition also is not a new format. However the format created in my research offers a different approach to what is currently available. One of the most sophisticated tactile exhibitions, Haptic by Kenya Hara, offers specifically created exhibition pieces by challenging and internationally acclaimed artists. I visited this inspiring exhibition after half-way through my research, after creating the Tactual Explorations project. What makes this exhibition 'haptic' is its providing small samples of materials used in each exhibit, therefore making the exhibits available to touch indirectly. My format of the exhibition differs from Hara's exhibition largely by offering visitors not just samples of but entirety of the objects to be examined by touch. Also this difference can be seen in the curation approach where artists in Kenya Hara's exhibition were invited to focus on material. In Tactual Explorations on the other hand, artists were all asked to focus on a tactile property (or properties) of one selected object and justify their technique and material according to this detail.

The biggest inspiration to my approach and ideas during this research has been Fiona Candlin's past work. Not only did her work stop me from attempting to re-invent the wheel, it also broadened my view to my topic, as she approaches her work with an impressive open-mindedness. In *Blindness, Art and Exclusion in Museums and Galleries*, Candlin (2003) focuses on her interviews with blind people, and analyses the touch facilities available at museums. Her criticism of the exclusion and the concept of inclusion bring justification to the need for optional inclusive access to precious exhibits that my research argues for. Even though my research does not come against the 'do not touch' policy of the museums, nor questions it actively, with her article

Don't Touch! Hands off!, I cannot deny the positive effect of Candlin (2004) in my idea of touch as conceptualist from the different viewpoints of who does the touching and who authorizes the touch. Also in this study Candlin provides her reflection on need for touch, and in *The Dubious Inheritance of Touch: Art History and Museum Access* (Candlin 2006), it is possible to see an even more in-depth analysis of why touch is very appropriate for access in general, which helped my research to take this as a fact, not only as an assumption. As well as her writings, her creative approach to authoring her PhD thesis⁶⁸ enabled my research to develop further and more efficiently.

7.8 TOPICS FOR FUTURE WORK

Before I conclude with the potential future that this thesis could be taken to, I would like to introduce some immediate plans as the breadth of the research did not allow them to be included in this thesis. I believe making the access to this thesis more inclusive could be the next step, as it would match the nature of the study. One option is to reproduce this thesis in Grade -2 Braille and as an audio-book. This would require further funding, however once it is achieved, a thesis in these two formats would have the potential to set a good example for accessible and inclusive presentation of academic work.

Another immediate project that will be initiated from this thesis is the Haptic Vision & Tangible Images photobook with essays. I will also propose holding an exhibition with the same theme and same selected photographs and essays to take place. Tactile interaction with photographic information could be studied further within this project in order to develop it as a wider research method. This could initiate collaborative work with researchers working with the concepts of Haptic Vision and Haptic Cinema.

Tactual Explorations as a format is suitable to be applied to many museum objects. Staying within the same topic, I would be willing to apply the principle to different kind of objects, such as museum exhibits in glass cabinets that are too small to handle (or too small for the museum to risk opening to public handling). The multi-finger haptics that is mentioned in the Literature Review and the Critical Discussion & Analysis chapters could be applied to Tactual Explorations model, and through virtual and physical artworks visitors can enjoy a tactile interpretation.

⁶⁸ Please see *Writing As Practice* in the Methodology & Methods chapter

It is also possible to introduce newer technological developments to the format in order to achieve better interpretation and open the experience to more people. New developments in assistive technology, such as the BrainPort device mentioned in the Literature Review, that enables sight through touch receptors on the tongue (which was already looked at by my research) can always be added to Tactual Explorations format, as long as the technology is kept as a medium rather than as means to amaze visitors.

I can see future possibilities of this research being carried forward, especially by curatorial researchers and information designers studying similar topics. They could adopt the 'practice of touch' as their method and develop it further; make it better. My motivating hope is that these research projects will be all realised with the human aspect in the foreground at all times.



References

- _____. (1992). Sophocles. in: The Concise Oxford Companion to the Theatre / Oxford Reference Online. Hartnoll, P. & Found, P.(Eds.), Oxford University Press
- Al-Saji, A. (2010). "Bodies and sensings: On the uses of Husserlian phenomenology for feminist theory." Continental Philosophy Review vol. 43 (no. 1): pp.13-37
- Ames, M. M. (2006). "Counterfeit museology." Museum Management and Curatorship vol. 21 (no. 3): pp.171-186
- Aristotle (c1941). De Anima in: The Basic Works of Aristotle. McKeon, R.(Ed.) New York, Random. pp.535-603
- Axel, E. S. & Levent, N. S., eds. (2003). Art beyond sight : a resource guide to art, creativity, and visual impairment. New York, AFB Press.
- Baird, F., Moore, C. J., *et al.* (2000). "An ethnographic study of engineering design teams at Rolls-Royce Aerospace." Design Studies vol. 21 (no. 4): pp.333-355
- Ballesteros, S. & Heller, M. A. (2006). Conclusions: Touch and blindness. in: Touch and blindness: psychology and neuroscience. Heller, M. A. & Ballesteros, S.(Eds.) Mahwah, N.J., Lawrence Erlbaum Associates. pp.197-218
- Barrett, E. (2007). Foucault's 'What is Author': Towards A Critical Discourse of Practice As Research. in: Practice as research : approaches to creative arts enquiry. Barrett, E. & Bolt, B. D.(Eds.) London, I. B. Tauris. pp.135-146
- Bates, K. (1998). A social history of blindness, Loughborough University. PhD thesis
- BBC. (2002). "Virtual hands reach across the ocean." BBC News Online: Technology Retrieved [30 May 2008] from <<http://news.bbc.co.uk/1/hi/technology/2371103.stm>>>
- Becatoros, E. (2004). "Tactile museum helps the blind discover birthplace of ancient Olympics." AP Worldstream (no. 25 August):
- Biggs, M. & Buchler, D. (2008). "Eight criteria for practice-based research in the creative and cultural industries." Art, Design & Communication in Higher Education vol. 7 (no. 1): pp.6-18
- Bourner, T. & Simpson, P. (2005). "Practitioner-centred research and the Ph.D." Action Learning: Research and Practice vol. 2 (no. 2): pp.133 - 151
- British Museum. (2004). "Educational Access to the Museum's collections and programmes." Series Educational Access to the Museum's collections and programmes Edition. Retrieved [14 October 2004] from <<http://www.british-museum.ac.uk/education/access/home.html>>
- British Museum. (2011). "Search Object Details: The Arundel Head." Retrieved [13 September 2011] from <<http://www.britishmuseum.org> (search term: Sophocles)>
- Brown, B. (2001). "Thing Theory." Critical Inquiry vol. 28 (no. 1): pp.1-22
- Burgstahler, S. (2011). "Universal Design in Education: Principles and Applications " University of Washington Retrieved [8 August 2011] from <http://www.washington.edu/doit/Brochures/PDF/ud_edu.pdf>
- Burn, L. (1991). The British Museum book of Greek and Roman Art. British Museum Press.
- Buytendijk, F. J. J. (1970). "Some Aspects of Touch." Journal of Phenomenological Psychology vol. 1 (no. 1): pp.99-122

- Candlin, F. (1998). Artwork and the boundaries of academia: a theoretical/practical negotiation of contemporary art practice within the conventions of academic research. Center for Social Theory and Technology. Staffordshire, Keele University
- Candlin, F. (2003). "Blindness, Art and Exclusion in Museums and Galleries." International Journal of Art & Design Education vol. 22 (no. 1): pp.100-110
- Candlin, F. (2004). "Don't Touch! Hands Off! Art, Blindness and the Conservation of Expertise." Body Society vol. 10 (no. 1): pp.71-90
- Candlin, F. (2006). "The Dubious Inheritance of Touch: Art History and Museum Access." Journal of Visual Culture vol. 5 (no. 2): pp.137-154
- Candlin, F. (2008). Museums, modernity and the class politics of touching objects. in: Touch in museums : policy and practice in object handling. Chatterjee, H.(Ed.) Oxford, Berg. pp.9-20
- Candy, L. (2006). "Practice Based Research: A Guide." Creativity & Cognition Studios, University of Technology Sydney Retrieved [01 February 2010] from <http://www.creativityandcognition.com/resources/PBR_Guide-1.1-2006.pdf>
- Candy, L., Amitani, S., *et al.* (2006). "Practice-led strategies for interactive art research." CoDesign vol. 2 (no. 4): pp.209 - 223
- Candy, L. & Creativity & Cognition Studios. (2010). "Practice-Related Research." Creativity & Cognition Studios, University of Technology Sydney Retrieved [19 April 2010] from <<http://www.creativityandcognition.com/content/view/122/131/>>
- Carrier, D. (2006). Museum skepticism : a history of the display of art in public galleries. Durham, N.C. ; London, Duke University Press.
- Caudell, T. P. & Mizell, D. W. (1992). Augmented reality: an application of heads-up display technology to manual manufacturing processes. System Sciences, 1992. Proceedings of the Twenty-Fifth Hawaii International Conference on System Sciences
- Chatterjee, H., ed. (2008). Touch in museums : policy and practice in object handling. Oxford, Berg.
- Classen, C. (2005). Touch in the Museum. in: The book of touch. Classen, C.(Ed.) Oxford, Berg. pp.275-286
- Cole, A. L. & Knowles, J. G. (2008). Arts-informed Research. in: Handbook of the arts in qualitative research : perspectives, methodologies, examples, and issues. Knowles, J. G. & Cole, A. L.(Eds.) Los Angeles ; London, SAGE. pp.55-70
- Coleman, R. (2001). Living longer: The new context for design. Design Council.
- Crooke, H., Bauhin, C., *et al.* (1631). Mikrokosmographia. A description of the body of man: Together vvith the controuersies thereto belonging. 2 pt. Printed by Thomas & Richard Cotes; sold by Michael Sparke: London.
- Cross, N. (1999). "Design Research: A Disciplined Conversation." Design Issues vol. 15 (no. 2): pp.5-10
- CUBiC. (2005). "Haptic Interfaces Research Group." Center for Cognitive Ubiquitous Computing Retrieved [10 December 2005] from <http://cubic.asu.edu/research/haptic_interfaces.html>
- Curiosity & Imagination, the national network for children's hands-on learning,. (2007). "Hands-on, Minds-on." Retrieved [18 March 2007] from <<http://www.curiosityandimagination.org.uk/>>
- Dalby, T. & Plambeck, M. (2009). "The Haptic Guide." Retrieved [01 May 2010] from <<http://www.hapticguide.com>>

- DAM. (2005). "Technology timeline." Series Technology timeline Edition. Retrieved [12 March 2007] from <<http://www.dam.org/history/index.htm>>
- Dean, D. (1994). Museum exhibition : theory and practice. London ; New York, Routledge.
- Derrida, J. (1993). Memoirs of the blind : the self-portrait and other ruins. Chicago ; London, University of Chicago Press.
- Derrida, J. (2000 [2005]). On touching, Jean-Luc Nancy. Stanford, Calif., Stanford University Press.
- Dias, J. M. S., Santos, P., *et al.* (2004). Gesturing with Tangible Interfaces for Mixed Reality. in: Gesture-based communication in human-computer interaction : 5th International Gesture Workshop, GW 2003 : Genova, Italy, April 2003 : selected revised papers. Camurri, A. & Volpe, G.(Eds.) Berlin ; London, Springer. *pp.*399-408
- Ditlea, S. (2002). Reality Redefined: Augmented reality blends virtual worlds and real worlds in ways that will soon enhance our daily lives. Computer Graphics World. 25
- Eldredge, B. (2011). "Brooklyn Museum responds to negative NYT review." Museummonger: Museum views, museum news Retrieved [7 April 2011] from <http://www.nytimes.com/2011/03/15/arts/design/tipi-heritage-of-the-great-plains-review.html?_r=1>
- Field, T. (2001). Touch. Cambridge, Mass., MIT Press.
- Foster, P. & Highfield, R. (2002) Internet handshake across the Atlantic The Daily Telegraph. *p.*3. Published on: 30 October 2002
- Foucault, M. (1979). What Is an Author. in: Textual strategies : Perspectives in post-structuralist criticism. Harari, J. V. E.(Ed.) Ithaca, Cornell U.P. *pp.*141-160
- Frayling, C. (1993). Research in art and design. Royal College of Art.
- Geller, M. (2007). Archaeology of Touch: Babylonian Magic and Healing. in: The power of touch : handling objects in museum and heritage contexts. Pye, E.(Ed.) Walnut Creek, CA, Left Coast Press. *pp.*63-72
- Gemperle, F., Ota, N., *et al.* (2001). Design of a Wearable Tactile Display Fifth International Symposium on Wearable Computers (ISWC'01), IEEE Computer Society, Zurich, Switzerland.
- Ginnerup, S. (2009). Achieving full participation through Universal Design. Council of Europe (in co-operation with the Committee of Experts on Universal Design)Strasbourg, Council of Europe.
- Goonetilleke, T. S. (2003). Towards inclusive design through constraint modelling and computer aided ergonomics, Loughborough University. PhD Thesis
- Gray, C. (1996). Inquiry through practice: Developing Appropriate Research Strategies. No Guru, No Method?, University of Art and Design Helsinki (UIAH), Finland. Retrieved [15 May 2010], from <<http://web.archive.org/web/20040411102312/www2.rgu.ac.uk/criad/cgpapers/ngnm/ngnm.pdf>>
- Gray, C. & Malins, J. (2004). Visualizing research : a guide to the research process in art and design. Aldershot, Ashgate.
- Hahn, T. (2007). Sensational knowledge : embodying culture through Japanese dance. Middletown, Conn., Wesleyan University Press.

- Hall, J. (2006). Desire and disgust: touching artworks from 1500 to 1800. in: Presence: The Inherence of the Prototype within Images and Other Objects. Maniura, R. & Shepherd, R.(Eds.) Hants, Ashgate. *pp*.145-160
- Hallett, J. P. (1997). Introduction in: Compromising traditions : the personal voice in classical scholarship. Hallett, J. P. & Van Nortwick, T.(Eds.) London, Routledge. *pp*.1-15
- Hambrook, C. (2009). "Pauline Alexander: the many faces of discrimination." Disability Arts Online Retrieved [12 April 2010] from <[http://www.disabilityartsonline.org.uk/?item=581&itemoffset=2&unique_name=pauline alexander discrimination](http://www.disabilityartsonline.org.uk/?item=581&itemoffset=2&unique_name=pauline%20alexander%20discrimination)>
- Haraway, D. (1988). "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." Feminist Studies vol. 14 (no. 3): *pp*.575-599
- Haraway, D. J. (1991). Simians, cyborgs and women : the reinvention of nature. London, Free Association.
- Harding, R. J. (2008). "The head of a certain Macedonian King: an old identity for the British Museum's 'Arundel Homer'." British Art Journal vol. 9 (no. 2): *p*.(cover story)
- Harper, D. (2002). "Talking about pictures: a case for photo elicitation." Visual Studies vol. 17 (no. 1): *pp*.13 - 26
- Harvey, E. D. (2002). Introduction: The "Sense of All Senses". in: Sensible flesh : on touch in early modern culture. Harvey, E. D.(Ed.) Philadelphia, Pa., University of Pennsylvania Press ; Wantage : University Presses Marketing. *pp*.1-21
- Harvey, E. D. (2002). The Touching Organ: Allegory, Anatomy, and the Renaissance Skin Envelope. in: Sensible flesh : on touch in early modern culture. Harvey, E. D.(Ed.) Philadelphia, Pa., University of Pennsylvania Press ; Wantage : University Presses Marketing. *pp*.81-102
- Haseman, B. (2006). "A manifesto for performative research." Media International Australia incorporating Culture and Policy vol. 2006: *pp*.98-106
- Haseman, B. (2007). Rupture and recognition : identifying the performative research paradigm. in: Practice as research : approaches to creative arts enquiry. Barrett, E. & Bolt, B. D.(Eds.) London, I. B. Tauris. *pp*.147-157
- Haseman, B. (2007-b). "Tightrope writing : creative writing programs in the RQF environment." TEXT: journal of writing and writing courses vol. 11 (no. 1): *pp*.1-15
- Heim, M. (1998). Virtual realism. New York ; Oxford, Oxford University Press.
- Heller, M. A. (2003). Haptic perceptual illusions. in: Touching for knowing : cognitive psychology of haptic manual perception. Hatwell, Y., Streri, A.*et al*(Eds.) Amsterdam, John Benjamins. *pp*.161-171
- Heller, M. A. & Schiff, W. (1991). The Psychology of touch. Hillsdale, N.J., L. Erlbaum.
- Hockey, J. (2003). "Practice-Based Research Degree Students in Art and Design: Identity and Adaptation." International Journal of Art & Design Education vol. 22 (no. 1): *pp*.82-91
- Irigaray, L. (1985). This sex which is not one. Ithaca, NY, Cornell University Press.
- Irigaray, L. (1996). Divine Women. in: Women, knowledge and reality : explorations in feminist philosophy. Garry, A. & Pearsall, M.(Eds.) New York ; London, Routledge. *pp*.471-484
- Irigaray, L. (2008). Sharing the world. London, Continuum.

- Iyengar, S. (2002). "Handling Soft the Hurts": Sexual Healing and Manual Contact in Orlando Furioso, The Faerie Queene, and All's Well That Ends Well. in: Sensible flesh : on touch in early modern culture. Harvey, E. D.(Ed.) Philadelphia, Pa., University of Pennsylvania Press ; Wantage : University Presses Marketing. pp.39-61
- Jansson, G., Bergamasco, M., *et al.* (2003). "A new option for the visually impaired to experience 3D art at museums: manual exploration of virtual copies." Visual Impairment Research vol. 5 (no. 1): pp.1 - 12
- Johnson, K. (2011) Plains Indian Culture, as Seen Through the Ingenuity of the Tepee New York Times. New York edition, p.C5. Published on: 15 March 2011
- Kaplan, L. J. (2006). Fetishism and the Fetishism Strategy. in: Cultures of fetishism Basingstoke, Palgrave Macmillan. pp.1-14
- Kruger, L. (1996). Pain and touch. San Diego, Calif. ; London, Academic Press.
- Kusayama, K. (2005). "Access to museums for visually challenged people in Japan." International Congress Series vol. 1282: pp.877-880
- Lacan, J. (1992). The ethics of psychoanalysis 1959 - 1960. Volume 7 of The seminar of Jacques Lacan: Miller, J. A.(Ed.), Cambridge University Press.
- Lazzari, M., McLaughlin, M. L., *et al.* (2002). A Haptic Exhibition of Daguerreotype Cases for usc's Fisher Gallery. in: Touch in virtual environments : haptics and the design of interactive systems. McLaughlin, M. L., Hespanha, J. o. P.*et al*(Eds.) Upper Saddle River, N.J. ; [Great Britain], Prentice Hall PTR. pp.260-269
- Leavy, P. (2009). Method meets art : arts-based research practice. New York ; London, Guilford.
- Lewis, F. A. (1982). "Accidental Sameness in Aristotle." Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition vol. 42 (no. 1): pp.1-36
- Macdonald, A. S. (2002). The Scenario of Sensory Encounter: Cultural Factors in Sensory-Aesthetic Experience. in: Pleasure with products : beyond usability. Green, W. S. & Jordan, P. W.(Eds.) London, Taylor & Francis. pp.113-123
- Mace, R. L., Hardie, G. J., *et al.* (1991). Accessible Environments: Toward Universal Design. in: Design intervention : toward a more humane architecture. Preiser, W. F. E., Vischer, J.*et al*(Eds.) New York, Van Nostrand Reinhold. pp.155-176
- Macleod, K. (2000). The Function of the Written Text in Practice Based PhD Submissions. University of Hertfordshire.Retrieved [01 May 2008] from <<http://www.herts.ac.uk/artdes/simsim/conex/res2prac/wp/>>
- Macpherson, H. M. (2007). Landscapes of blindness and visual impairment: sight, touch and laughter in the English countryside. Newcastle, University of Newcastle upon Tyne. PhD thesis
- Mangeni, P. (2007). Negotiating Gender Equity Through Theatre for Development. School of Arts. Australia, Griffith University. PhD thesis
- Marks, L. U. (1997). "The Quays' Institute Benjamenta: an olfactory view. (feature film)." Afterimage:
- McLinden, M. & McCall, S. (2002). Learning through touch : supporting children with visual impairment and additional difficulties. London, David Fulton.
- McNiff, S. (2008). Art-based Research. in: Handbook of the arts in qualitative research : perspectives, methodologies, examples, and issues. Knowles, J. G. & Cole, A. L.(Eds.) Los Angeles ; London, SAGE. pp.29-40

- Merriam-Webster. (2007). "Merriam-Webster's Online Dictionary." Retrieved [15 August 2007] from <<http://www.m-w.com/dictionary>>
- Miller, N. K. (1991). Getting personal : feminist occasions and other autobiographical acts. New York ; London, Routledge.
- MLA. (2007). "MLA Policy." Series MLA Policy Edition. from <<http://www.mla.gov.uk>>
- Montagu, A. (1986). Touching : the human significance of the skin. New York ; London, Harper & Row.
- Mulrenin, A. M. (2005). DigiCULT: Unlocking the Value of Europe's Cultural Heritage Sector. in: Digital applications for cultural and heritage institutions. Hemsley, J., Cappellini, V. et al (Eds.) Aldershot, Ashgate. pp.17-25
- Murray, E. (1908). "A Qualitative Analysis of Tickling: Its Relation to Cutaneous and Organic Sensation." The American Journal of Psychology vol. 19 (no. 3): pp.289-344
- Murray, R. (2006). How to write a thesis. Maidenhead, Open University Press.
- Museum of Pure Form. (2004). Retrieved [12 May 2007] from <<http://www.pureform.org/>>
- NAFAE. (2004). "The Culture We Afford." Series The Culture We Afford Edition. Retrieved [12 October 2004] from <<http://www2.ntu.ac.uk/ntsad/nafe/letters/index1.shtml>>
- Neely, G. (2011). "What Is Psychophysics." Universität Leipzig Retrieved [30 March 2011] from <<http://uni-leipzig.de/~isp/isp/history/explanation.htm>>
- Noble, G. & Chatterjee, H. (2008). Museums, modernity and the class politics of touching objects. in: Touch in museums : policy and practice in object handling. Chatterjee, H.(Ed.) Oxford, Berg. pp.215-223
- Noordegraaf, J. (2004). Strategies of display : museum presentation in nineteenth- and twentieth-century visual culture. Amsterdam, Rotterdam Museum Boijmans Van Beuningen; NAI 2004.
- O'Doherty, B. (1999). Inside the white cube : the ideology of the gallery space. Berkeley, Calif. ; London, University of California Press.
- Open University (2003). Signals and perception : the science of the senses Block 5, Touch and pain. Science Level 3 Milton Keynes, Open University.
- Pagliano, P. J. (1999). Multisensory environments. London, David Fulton.
- Pearce, S. M. (1994). Museum Objects. in: Interpreting objects and collections. Pearce, S. M.(Ed.) London ; New York, Routledge. pp.9-11
- Pearson, A. (2003). A Museum Professional. in: Art beyond sight : a resource guide to art, creativity, and visual impairment. Axel, E. S. & Levent, N. S.(Eds.) New York, AFB Press. p.503 p.
- Perkins Museum. (2011). "Perkins School for the Blind History Museum." Retrieved [30 March 2011] from <<http://www.perkinsmuseum.org/>>
- Peter, W. (2004) How a blind man sees ; The sound of children playing and the splashing of rain are just as powerful as sight in experiencing the pleasures of the world, says Peter White The Independent. p.5. Published on: 6 April
- Phillips, A. (1993). On kissing, tickling and being bored : psychoanalytic essays on the unexamined life. London, Faber and Faber.
- Pring, L. & Eardley, A. (2003). Cognitive Styles and Effective Presentation of Information for Children. in: Art beyond sight : a resource guide to art, creativity,

- and visual impairment. Axel, E. S. & Levent, N. S.(Eds.) New York, AFB Press. *pp.*113-135
- Prytherch, D. & Jefsoutine, M. (2007). Touching Ghosts: Haptic Technologies in Museums. in: The power of touch : handling objects in museum and heritage contexts. Pye, E.(Ed.) Walnut Creek, CA, Left Coast Press. *pp.*223-240
- Prytherch, D. & Jerrard, B. (2003). "Haptics, the Secret Senses; the covert nature of the haptic senses in creative tacit skills." Proceedings of Eurohaptics 2003: *pp.*384-396
- Putnam, J. (2001). Art and artifact : the museum as medium. London, Thames & Hudson.
- Queensland University of Technology (QUT) (2010). "Principles Guiding Practice-Led Research in the PhD and MA (Research)." Postgraduate Research Student Handbook - Faculty of Creative Industries: *pp.*30-31
- Raskin, J. (1999). Presenting Information. in: Information design. Jacobson, R. E.(Ed.) Cambridge, Mass., MIT Press. *pp.*341-348
- Rayner, A. (1998). Access in mind : towards the inclusive museum. Intellectual Access Trust.
- Reeves, S. (2004). Research Techniques for augmented Reality Experiences, University of Nottingham
- Reid, M. & Naylor, B. (2005). "Three reasons to worry about museum researchers." Museum Management and Curatorship vol. 20 (no. 4): *pp.*359-364
- RNIB. (2011). "Inclusive Design " Retrieved [23 June 2011] from <<http://www.tiresias.org/research/guidelines/inclusive.htm>>
- Rosenbaum, L. (2011) Shows That Defy Stereotypes The Wall Street Journal. Published on: 15 March 2011
- Schaffer, S. (1998). Regeneration: The Body of Natural Philosophers in Restoration England. in: Science incarnate : historical embodiments of natural knowledge. Lawrence, C. & Shapin, S.(Eds.) Chicago, Ill. ; London, The University of Chicago Press. *pp.*83-120
- Schön, D. A. (1984). The reflective practitioner : how professionals think in action. New York, Basic Books.
- Serota, N. (1996). Experience or interpretation : the dilemma of museums of modern art. Walter Neurath memorial lectures ; 28 London, Thames and Hudson.
- Sevilla, J. A. M. (2006). Tactile Virtual Reality: A New Method Applied to Haptic Exploration. in: Touch and blindness : psychology and neuroscience. Heller, M. A. & Ballesteros, S.(Eds.) Mahwah, N.J., Lawrence Erlbaum Associates. *pp.*121-136
- Shaw, E. (2007). Re-Locating Ceramics: Art, Craft, Design? A practice-based, critical exploration of ceramics which relocates the discipline in the context of consumption, the home and the everyday. London, University of Westminster. PhD thesis
- Shettel, H. (1997). "Exhibit Controversy: Can It Be Avoided? Can We Help?" Visitor Studies vol. 9 (no. 1): *pp.*268-275
- Spivak, G. C. (1990). The post-colonial critic : interviews, strategies, dialogues. Harasym, S.(Ed.), Routledge.
- Stewart, R. (2007). Creating new stories for praxis: navigations, narrations, neonarratives. in: Practice as research : approaches to creative arts enquiry. Barrett, E. & Bolt, B. D.(Eds.) London, I. B. Tauris. *pp.*123-133

- Stewart, S. (1999). Prologue: From the Museum of Touch. in: Material memories: Design and Evocation (Materializing Culture) Kwint, M., Breward, C.*et al*(Eds.) Oxford, Berg. *pp*.17-36
- Stickley, T. (2007). Promoting Mental Health Through an Inner City Community Arts Programme: A Narrative Inquiry. School of Nursing. Nottingham, University of Nottingham. PhD thesis
- Sullivan, G. (2005). Art practice as research : inquiry in the visual arts. London, Sage Publications.
- The London Consortium. (2007). "Masters & Doctoral Programme in Humanities and Cultural Studies Practice Research (and the Practice of Research) Seminar " Retrieved [21 April 2010] from <<http://www.londonconsortium.com/2007/05/14/practice-research-and-the-practice-of-research-seminar/>>
- V&A. (2007). "The Causes of Deterioration and Decay." Series The Causes of Deterioration and Decay Edition. Retrieved [12 March 2007] from <http://www.vam.ac.uk/school_stdnts/schools_teach/teachers_resources/conservation/deterioration_decay/index.html>
- Waller, S. & Clarkson, P. J. (2009). Tools for Inclusive Design. in: The Universal Access Handbook. Stephanidis, C.(Ed.) Boca Raton, Fla., CRC Press. *pp*.1-14 (section 19)
- Wallinger, M. (2009). (Exhibition) The Russian Linesman: Frontiers, Borders and Thresholds. Hayward Gallery. London, 8 February 2009 - 4 May 2009
- Weber, E. H. (1834 [1996]). E.H. Weber on the tactile senses. Ross, H. E. & Murray, D. J.(Eds.) Hove, Erlbaum (UK) Taylor & Francis.
- Welsh, P. H. (2005). "Re-configuring museums." Museum Management and Curatorship vol. 20 (no. 2): *pp*.103-130
- Wicab, Inc. (2011). "Brainport Technologies." Retrieved [4 September 2011] from <<http://vision.wicab.com/>>
- Wiltshire, S. F. (1997). The authority of experience in: Compromising traditions : the personal voice in classical scholarship. Hallett, J. P. & Van Nortwick, T.(Eds.) London, Routledge. *pp*.168-181
- Wing, A., Giachritsis, C., *et al*. (2007). Weighing Up the Value of Touch. in: The power of touch : handling objects in museum and heritage contexts. Pye, E.(Ed.) Walnut Creek, CA, Left Coast Press. *pp*.31-44
- Winnicott, D. W. (1952 [1958]). Psychoses and Child Care. in: Collected Papers. Through paediatrics to psychoanalysis London, Tavistock Publications. *pp*.219-229
- Xu, D., Mazzone, E., *et al*. (2005). Informant Design with Children - Designing Children's Tangible Technology. International Workshop: Re-Thinking Technology in Museums: Towards a New Understanding of People's Experience in Museums. Limerick (Ireland).29-30 June 2005
- Yee, J. S. R. (2009). Capturing tacit knowledge: documenting and understanding recent methodological innovation used in Design Doctorates in order to inform Postgraduate training provision. International Conference 2009 of the DRS Special Interest Group on Experiential Knowledge
- Yohanan, S., Chan, A. M., *et al*. (2005). Hapticat: exploration of affective touch. 7th international conference on Multimodal interfaces, ACM Press, Toronto, Italy.

Appendices

APPENDIX 1: RE-DEFINITION OF TERMS & KEYWORDS

In order to bring a better sense to this study's methodological approach and practice-based elements, and also to avoid potential confusion, it is important to draw boundaries between the usage and meaning of some terms that will be used in this thesis. This is not a glossary as such, but an insight to how some of the keywords and terms are being used

Artwork / Artworks: This is usually written with multiple-wording, such as ‘works of art’ or ‘art work’. In this thesis however, the word is deliberately used as a single word, and can be used in plural form also. The reason behind this is simply for ease of readability, as this word is repeated so many times both in theory and practice sections of the research, therefore accepted as one word that defines work of art. In the context of this research, generally, artwork refers to any work created by artists by following the criteria given on the artist brief which is written especially for this research.

Active touch: Act of intentional touch, touch that seeks information.

Haptics: In this research, Haptics refer to the study of Haptic Technologies. Because it is usually written with capital H, this thesis also follows this rule in order to keep consistency in the academic knowledge. For the nature of this research, Haptics is also by default included in the notion of emerging technologies when a generic reference to pioneering advancements in technology is made.

Interface: A concept or product that builds communication or serves as a dialogue aid between two points, regardless of its use of technologies. In this thesis *interface* is perceived as a notion rather than a computer-based routine. For example in the User-feedback exercise described in *Projects and Experiments*, a wooden sculpture hidden in a bag represented the notion of interface by acting as a medium to aid users in interacting with an untouchable identical object. The sculpture itself was not the interface, but it being hidden in a bag to be identified was. In other words, because of the task assigned to it the hidden sculpture became the front-end of the interface.

Passive touch: Perception of touch that does not require an action. It usually occurs when being touched by the other (object or person).

Replica: An identical copy of a museum object. Replicas in museum settings are often made from a material other than the original’s own. Throughout this research there are numerous references to the replica of the Bronze Bust of Sophocles, made by the British Museum as both the original and the replica are the focus objects of the study. The replica of Bronze bust of Sophocles was cast in resin instead of the original material bronze.

Sophocles: The common spelling of the playwright’s name is ‘Sophocles’. However it is important to note that in some publications, the name was spelt as ‘Sophokles’. In order to keep the consistency, all occurrences will read as ‘Sophocles’. And to avoid breaking the flow of the text, the corrections won’t

be referred to since there won't be any direct quotations from the publications that used the less-common version.

Tactile interpretation: Re-interpretation or interpretation of a museum object by giving special attention to its texture information. In addition to this, as this research would describe, an ideal tactile interpretation would not simply present direct replicas or embossed copies of the original as a design solution. The Tactual Explorations project in the Projects and Experiments chapter defines this proposition in detail.

Tactile / Tactual / Haptic: In the studies of Haptics and 'touch', these words are generally used interchangeably. They all, in general terms, are defined as 'of / relating / proceeding from / producing a sensation of touch', and stated by many dictionaries as being the synonyms of each other. In this thesis however, and throughout the research, a special attention was paid to the purpose of using these words individually, unless direct quotes were used. The following comments might be helpful in conveying this informal categorisation that was formed through research into the interdisciplinary subject areas where Haptics and touch-based inquiries were made in:

Tactile: This word is used to define any feeling or texture that can be perceived by sense of touch. It is mainly used when referring to physical aspects of touch or texture information alone. In the use of this word, passiveness or activeness of touch is ignored; the word is more practical than descriptive.

Tactual: Any effect or feeling based on tactile sensations. This word is also preferred when referring to psychological results of active touch

Haptic: A sense-based activity relating to active touch. This word is also favoured when referring to tactile interaction as a result of technology-based sensory information. Because of the word's common association with technology, haptic seems to be more appropriate than tactile or tactual in these contexts.

User-feedback exercise: A data collection method that relies directly on the user's feedback (verbal or behavioural), through a research scenario in a controlled environment.

Visual Impairment: The term *visual impairment* used in this research includes blindness, partial sightedness and low-vision. Someone able to see without corrective instruments such as glasses, contact lenses is not considered here as being visually impaired. Also, these are only generic guidelines for practical reasons such as drawing boundaries or for figurative use of speech. It is not the intention of this research to present a political or descriptive discussion on visual impairment

APPENDIX 2: FIVE TESTS OF CREDIBILITY

This appendix contains my analysis of how this thesis meets the essential credibility requirements of doctoral research, by giving examples from my actions and approach

Attempting to locate creative research in existing research traditions, Haseman (2007-b) presents his view of five credibility tests that researchers must follow in order to apply their creative practice to their research in a credible and recognized manner. By showing the differences between traditional research and practice related research, Haseman shows what could be classified as research. Prior to Haseman, Cross (1999) also declared a five-point system where the “best practice in design research” share the five common criteria, that research should be purposive, inquisitive, informed, methodical and communicable.

Although neither Haseman nor Cross claims that every piece of research project that meets these criteria would produce good research, Cross argues that establishing these points would help exclude those design projects that don’t work as research in the first place. Also, both Haseman and Cross claim that these points are necessary for research in all disciplines. Therefore by addressing these five rules in the form of a synthesis from both scholars⁶⁹, I wish to illustrate how I define my practice as research as well as research through practice. It must be noted that this section does not summarise my full practice, instead uses examples to show how the research meets these points.

1) Research should be PURPOSIVE and INQUISITIVE in that there is a clearly established worthy problem which drives the study, usually made clear through a 'research question' or 'an enthusiasm of practice'; and should acquire new knowledge:

In specific terms, the purpose of my research is to explore the concept of ‘touch’ in order to contribute to the understanding of it; and on a practical level it inquires whether or not a tactile interaction with untouchable visual information can be achieved through a creative interface between the museum visitor and a precious museum exhibit. The research process itself can be presented as the evidence of enthusiasm for practice, since it was declared as practice of touch. For example, in addition to observing the visitors at the British Museum, I also created an environment, the Tactual Explorations public event, where people could be part of an experience. By attaching the aims of the exhibition to inclusive approach not only from the physical access point of view but also from the view of participation as artists, students, visitors etc, I gained the opportunity to witness a collective representation of tactile communication. Naturally as most PhD research projects, my research also witnessed numerous changes in direction and applied constant questioning that addressed even more problems throughout the years, in search of a new knowledge. For instance, the human aspect of touch grew to be more important than the technology only later on in the research, after realising that plenty of research was going into technology already, and important of touch was not conceptually studied as much.

⁶⁹ On this section, in order to make the readability of the text easier, quotation marks were not used; however here I declare that the headings in the five-point tests are created by combining views of both authors as cited on the previous paragraph.

2) Research should be METHODICAL in that, just as the research problem and its content are under scrutiny, so too will the process of research be scrutinised. It is necessary for the study to articulate its methodology convincingly and illustrate that it was carried out in a disciplined manner:

My research employs creative practice methodology in general and realises it with influences from traditional action research and also supports it with performative research as an alternative to the conventional qualitative and quantitative research paradigms. All methods applied are justified either through other scholar's published work or PhD projects successfully completed in the past. Methodological strategies and combination of methods are further explained in the *Methodology & Methods* chapter of this thesis.

3) Research should be INFORMED in that the research undertaken is conducted from an awareness of previous research and located within its field of enquiry and associated conceptual terrain:

A special attention to past research is displayed in the Literature Review chapter in order to place this study within knowledge, as well as pointing out the gap that this research addresses. This review acknowledges previous research not only within the museums and Haptics fields, but also other relevant topics such as Inclusive / Universal Design and importance of touch, aiming to raise awareness of touch as concept and people's relationship with it as means to communicate with their worlds.

4) Research should be COMMUNICABLE in that the knowledge claims made from the study must be reported to others in a testable and accessible form and demonstrate the benefit of the study in social, cultural, environmental or economic terms.

"Since practice is an irreducible theoretical moment" says Spivak "no practice takes place without presupposing itself as an example of some more or less powerful theory" (1990, p. 2). Supporting this statement, theory is realised as a natural procedure of research. Because of the interdisciplinary aspect of this research, my various styles and approaches to testing assumptions were backed up through theory (or vice versa). For example it was my assumption that an object is only an obstacle to a blind person, unless they have some way of interacting with it. To theorise this assumption I referred to "thing theory" by Brown (2001). I then invited a number of visually impaired persons to the British Museum to visit my selected object, the Bronze Bust of Sophocles, and observed how in some cases the participants' guide-dogs ignored the exhibit and its plinth as an obstacle. The bust behind the glass cage did not exist until participants were made aware of its location and given verbal description by myself. Throughout the research, situations like these are investigated both through practice, and theoretical framework behind or beyond this practice.

5) Research should be presented in a way that what becomes known is made available for sustained and verifiable peer review:

Even though it now seems to be a common practice for creative researchers to present only the creative artefact as the research outcome and support it with only a short exegesis, this is not the type of thesis I would like to achieve. My practice was created as the outcome of this research in some ways

(i.e. the Tactual Explorations project), but at the same time it is the means of gathering data and informing the thesis. The practice within this research took shape with feedback and constant human aspect within real-life situations applied. The Tactual Explorations project for example not only created this experience in the form of a public event, but also opened discussions between the artists that took part. Possibilities for peer-reviewing my practice was not restricted to the exhibition period either. For example, in addition to artists and visitors feedback, some work from this thesis later on was published in an edited book entitled *Touch in Museums* (Chatterjee 2008). Also, the results of the Tactual Explorations project were presented nationally and internationally at several conferences and research centers; open to criticism and feedback from other scholars.

APPENDIX 3: IMAGES FROM THE FIRST USER-FEEDBACK EXPERIMENT



APPENDIX 4: TACTUAL EXPLORATIONS ARTIST BRIEF

PLEASE READ THIS FIRST

Tactual Explorations Exhibition

Enclosed with this document is confidential information about the above project which forms part of my PhD research. You have expressed an interest in the project and I am sending the information to you for the sole purpose of assessing the practicability of you participating in the project. If you are still interested in the project **please do not read the information until you have read this covering letter.**

In perusing the confidential information you agree to keep all information supplied by me strictly confidential and not to disclose it to any person, firm or corporation or individual without my express written consent. You also agree not to use or copy information supplied by me for any purpose other than assessing the practicability of the project and you agree not to research the same.

In the event that no arrangements resulting in an agreement in regard to the project mature within a period of 1 month you agree to either return to me or destroy immediately all information and any copies thereof.

The above undertakings do not apply to information which:

- (a) was lawfully in your possession prior to disclosure;
- (b) is lawfully in the public domain or subsequently enters the public domain other than through your default or other unlawful act; or
- (c) subsequently becomes available to you from any legitimate source not subject to an obligation of confidentiality or non-use.

If you agree to be bound by the above conditions please proceed to peruse the information.

If you do not wish to be bound by these conditions, please discard the document without reading and erase it from your computer's (or public computer's) hard-disc.

Artist's Brief: Tactual Explorations Project

Working Title of the Project: Tactual Explorations: Sophocles

Duration of the Exhibition: 1 week, 29 September – 7 October 2006

Number of works included: 6 works (or sets of works)

Events: Private view, lectures, workshop and user-feedback exercises

Brief Statement

I am a PhD researcher working on haptic interactions with museum objects. I am looking for 5 professional artists working in Texture/Tactile Art, who are based in either London or Huddersfield (area can be widened to South East England and West Yorkshire), to be involved in my future exhibition project entitled Tactual Explorations.

The exhibition will consist of 6 original works produced by 5 commissioned artists and me; each to correspond to one or more tactile properties of the selected object that is prohibited to be touched by visitors (please see "Selected Museum Exhibit" section). The works will be produced according to the guidelines in this brief. I will be demonstrating the sense of touch that can be gained through a haptic device by creating a 3D computer model of the selected museum object; other 5 artists will signify the physical "touch" through their chosen technique and materials.

Artists should be able to travel to Huddersfield (West Yorkshire) on Friday 29th September 2006 to install their work and attend the Private View in the evening of the same day. Each selected artist will be paid a fee of £250 (inclusive of expenses) for their involvement in this project and their names will be credited in the research publication(s). All selected artists will be asked to sign a confidentiality agreement. The time-scale to create the works is between July and September 2006.

The Project

The "Tactual Explorations" is going to be a public event in the form of a week-long tactile exhibition allowing the artists and visitors analyse and consider the concept of tactile exhibitions and let the visitors explore the tactile information behind a visual exhibit.

Each artist will produce an individual piece or a set of artworks to represent specific tactile information of the same object that is part of a museum's collection. Each finished piece will be explored not only by vision but also by touch. In other words, the exhibition will demonstrate how one museum object can be explored tactually and what elements of the tactile perception can be represented by using a variety of materials.

Each work will talk for itself individually however when presented together in the exhibition room, they will act as distinctive pieces of one big tactile setting that represents one museum object.

Despite of being proposed as a stand-alone project at present, this event has the potential to be the pilot exhibition to a series of tactual exhibitions that could represent precious objects from big museums and present them to a wider audience.

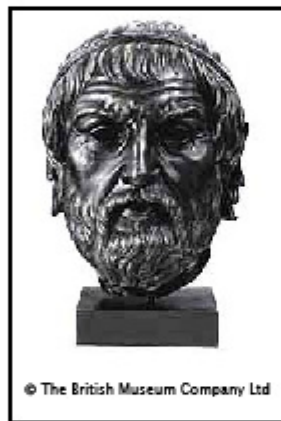
Project Aims and Objectives

- ☐ To raise awareness of issues relating to "inclusive exhibits" and the need to produce multi-sensory exhibition pieces.
- ☐ To provide opportunity to people with limited or no sight to have access to art exhibits
- ☐ To explore the main and hidden aspects of "touch" in an object that is exhibited
- ☐ To analyse and represent the tactile information (of an exhibition object) by layering the sensory properties involved and individually highlighting these properties
- ☐ To bring precious exhibits in bigger museums to visitors living away from these museums
- ☐ To evaluate public's view on the overall idea

Production / Artwork Creation

The Selected Museum Exhibit

Subject to further confirmation, the selected piece is the bronze bust of Sophocles at the British Museum, displayed in the room 22 of Greek and Roman Antiquities section. Because the surface is too delicate to be handled regularly, and original Greek bronze works on a large scale are quite rare, the bust is currently displayed in a glass cage and touching is strictly forbidden. These restrictions and the amount of surface detail available, make this exhibit the perfect object for the Tactual Explorations project.



The following text is taken from the British Museum's information pages about Sophocles bust: "This head represents a man of middle age, with a thick beard, slightly thinning hair and a severe expression, enhanced by a deeply wrinkled brow. His hair is bound by a rolled band, like a diadem of a type usually associated with Hellenistic rulers, rather than philosophers or playwrights. The body types for statues of famous intellectuals are generally semi-draped, with perhaps only the chest bared. Both the body and the face usually exhibit signs of age."

Tactile Information

As the main aim is to explore the tactile information of the object through representation, the production technique **will not be limited** to the object's own. Artists can focus on a detail taken from the original piece or represent the whole piece, in order to form the complete haptic experience they have in mind. Each artwork will focus on one or more of the following properties as the main feature of the artwork:

- | | | |
|--|--|-------------------------------------|
| <input type="checkbox"/> Vibration | <input type="checkbox"/> Shape | <input type="checkbox"/> Weight |
| <input type="checkbox"/> Surface texture | <input type="checkbox"/> Slope | <input type="checkbox"/> Elasticity |
| <input type="checkbox"/> Wetness/dryness | <input type="checkbox"/> Curved | <input type="checkbox"/> Pliability |
| <input type="checkbox"/> Surface temperature | <input type="checkbox"/> Hardness/softness | |

Scale of the works

The works' dimension should not be planned to exceed 150 cm, in any direction. The minimum scale is the dimensions of the actual object that is being represented, or the object's selected part. Please always consider the sense of touch and the physical possibilities of the visitor, when planning the scale and position of the works.

Materials

Although the proposals should be made with the selected bronze bust in mind, the material of the artwork is not limited to the actual material of this object. The artist can freely experiment with other materials to represent the texture properties of the original object. Artists are invited to take inspiration from varied sources that could truly represent the tactile properties of the selected museum object. Selected artists will be given the opportunity to further examine the "replica" of the Sophocles bust that will be purchased for this project.

Technical and physical considerations

During production, special consideration must be given to the following:

- ☐ Works should be durable
- ☐ Works shouldn't be vulnerable to being handled
- ☐ Maintenance costs should be as low as possible
- ☐ Health and safety of those handling the artworks should be considered

Conditions

Rights / Ownership

Although the artworks will be created according to this brief and specifically for the Tactual Explorations project, each artist will be able to keep the ownership of their individual works after the project is officially ended. After this date, artists can sell, destroy or alter their artworks freely. The project will not make any profit from artists' works. The official end date of the project is not yet decided however this will not be earlier than 8 October 2006 or later than 01 January 2007. This period enables the exhibition to tour to another venue if the opportunity arises. In the event of damage or loss to the artworks (however caused), the parties and organizations involved with this project cannot be held responsible.

Confidentiality Agreement

Because the selected artists will have access to the ongoing research and this project itself has derived from this research, the selected artists will be required to sign a standard Confidentiality Agreement, purely for the purpose of protecting the research data.

Funding and Payments

Due to the limits of the current funding, each selected artist can only be paid a fee of £250. This amount is to be fully inclusive of the artist's fee, materials and expenses. However, Art Council's grant is being sought for extra funding, and artists' travel and accommodation expenses are included in the budget that is presented to the committee. Only if this further grant is secured, artists can be offered a further fee. An invoice will be required before sending the payment.

Application Deadline and Production Timeline

Although the application process is less formal than many commissions, the selected deadline to receive proposals is 3 July 2006. If you see a deadline advertised different than this, this could be due to the advertising bodies' defaults. The applications will be reviewed as they arrive, so please feel free to submit earlier than this date.

The time-scale to create the works is between 15th July and 25th September 2006. Artists will be able to create their own schedule to work independently. From time to time, their process will be documented for research purposes without disturbing or distracting the artists.

Criteria for selection

- ☐ Proposal's relevance to the project
- ☐ Quality of previous work
- ☐ Previous experience of producing tactile works
- ☐ Willingness to take part in this project because of its research topic

Venue

Gallery 2 at the North Light Gallery in Huddersfield is provisionally booked. More information about the gallery can be obtained here: <http://www.northlightgallery.org.uk>

Events

Apart from the Private View on the first night, workshops, lectures and a user-feedback exercise are being planned for the duration of the exhibition. Artists should be able to attend the Private View on the evening of 29th September 2006 and install their work during the day. Apart from this day, the artists are welcome to stay and attend the events during the week although payment cannot be offered for this, at present. The grant application to Arts Council includes the first night accommodation in Huddersfield and the travel expenses, however this should not be taken as granted as the likelihood of further funding is very small.

How to apply

Please submit documents that contain the following information to Isil Onol at the address/email address below by Monday 3 July 2006.

- ☐ Please write a brief statement that describes the process that you would be undertaking, approximate dimensions of the work and materials that you would use
- ☐ Please write a very short/informal statement about why you would like to participate in this project
- ☐ Include images of your work, or web-links to your work
- ☐ Include your CV

You can email the documents to i.onol@hud.ac.uk or post the hard copies to Isil Onol, 55 Gleneagle Road, London SW16 6AY. Please only send optimized images. If the total file-size has to exceed 5mb, please use this email address instead: isil@isilonol.com. Both email accounts will be checked regularly.

**APPENDIX 5: TACTUAL EXPLORATIONS WORKSHOP
QUESTIONNAIRE**



Workshop Evaluation Form

Please fill out this form to give us your true assessment of the workshop you just attended. Your feedback will be used for academic research purposes only, your details will not be passed to any companies or third-parties.

Workshop title:

Personal Information (All fields are optional)

Your name:

Occupation:

Age group: ☐ Under 18 ☐ 18 - 29 ☐ 30 - 49 ☐ 50 - 69 ☐ 70 - 89 ☐ 90 and above

Do you consider yourself to have a disability?

☐ No ☐ Yes (please state)

Workshop feedback

1- Why did you attend this workshop? (Tick only the best one that applies)

- ☐ General interest
☐ To teach/demonstrate the content to others
☐ For future job
☐ Other (please state below)

2- To what level have you studied creative arts (in any field)?

- ☐ Never
☐ Trained as part of the job
☐ Standard grade / GCSE
☐ Undergraduate
☐ Postgraduate / Academic research
☐ Other (please state below)

3- Have you visited the "Tactual Explorations" exhibition?

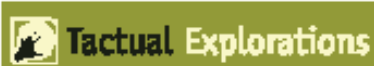
- ☐ Yes ☐ No, but I will visit ☐ No, and I won't visit

4- If you've answered yes to the question above, do you think the workshop was relevant to the exhibition?

- ☐ Yes ☐ No ☐ Other (please state)

5- Do you have any suggestions or any other comments for improvement?

**APPENDIX 6: TACTUAL EXPLORATIONS EXHIBITION
QUESTIONNAIRE**



Exhibition Evaluation Form

Please fill out this form to give us your true assessment of the Tactual Explorations exhibition. Your feedback will be used for academic research purposes only, your details will not be passed to any companies or third-parties.

Date of visit:

Personal Information (All fields are optional however filling them would be very useful to the research)

Your name:

Occupation:

Age group: ☐ Under 18 ☐ 18 - 29 ☐ 30 - 49 ☐ 50 - 69 ☐ 70 - 89 ☐ 90 and above

Do you consider yourself to have a disability?

☐ No ☐ Yes (please state)

Exhibition feedback

1- Why did you visit this exhibition? (Tick only the best one that applies)

- ☐ General interest in art exhibitions
☐ To teach/demonstrate the content to others
☐ Because of its tactile content
☐ Other (please state below)

2- To what level have you studied creative arts (in any field)?

- ☐ Never
☐ Trained as part of the job
☐ Standard grade / GCSE
☐ Undergraduate
☐ Postgraduate / Academic research
☐ Other (please state below)

3- Have you visited any other exhibitions with artworks specifically designed to be touched?

☐ Yes ☐ No

4- If you've answered yes to the question above, do you think this one is different and why?

☐ Yes,

☐ No,

5- Have you heard of "Haptic Technologies" before?

☐ Yes ☐ No

6- Have you tried or operated a "Haptic Device" before?

☐ Yes ☐ No

7- How would you rate the ease of use of the Haptic Device?

- ☐ Very easy
☐ Not easy at first, but it doesn't take too long to get used to
☐ Difficult
☐ Impossible to get used to
☐ Other (please state below)

8- Please rate the following statements:

	Strongly disagree	Disagree	Unsure	Agree	Strongly Agree
The tactile artworks enhance the "Haptic" simulation by offering the missing physical information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interpreting museum objects through tactile works is a very inclusive approach	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
With the help of the tactile artworks, the computer interface seemed to vanish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After interacting with all the artworks, I felt like I interacted directly with the Bust of Sophocles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt that the overall tactile interpretation did not limit me but provided space to add my own interpretation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9- Have you ever been to the British Museum?

- ☐ Yes ☐ No

10- Would you like to see other precious objects from National or International museums to be interpreted in a similar exhibition concept, in the future?

- ☐ Yes ☐ No

11- Do you have any suggestions or any other comments for improvement?

**APPENDIX 7: ESSAYS & PHOTOGRAPHS FOR HAPTIC
VISION AND TANGIBLE IMAGES**

Essay: *Untitled* by Clare.J.Bennett
Photograph: *PM* by Luca Poli



There is a dominant sense of reciprocity entrenched in this photograph, whereby a series of multiple 'touches' are in the process of manifestation at the same moment in time. On the simplest of levels, the physical surface textures come into play through the presence of a freshly oil slicked leg, arid thick skinned feet and the gritty abrasive structure of the concrete itself.

Sandwiched between the personal and the structural elements of the image is a supple apple, presumably its skin has been punctured under the pressure that the foot is exerting upon it, and so it seeps onto the asphalt below.

The apple shares a fraction of sunlight with the right foot but is mostly shaded by the wall in the background. But it is not enough to break down the components of this image in a way that belongs solely to our optical schema. In order to search beyond the confines of such optic dominance,

another form of translation is needed to establish some kind of sensorial rapport.

Although the physical body may feel disinclined to re-enact the photograph's corporeal structure, strands of associated memory and imagination are beckoned to engage. In turn, the weight of the suggested materiality belonging to the image, gives way to a shift in our sensory schema. Here we may allow ourselves to move beyond the physical image in order to weaken its impenetrable surface and become the subject itself. This transitional period allows us to start dealing with the photograph's content, if only through our memory of it.

This way of connecting is negotiable, but if it becomes the accepted route, a series of sensory-cognitive episodes begin to take place where one can begin to engage with the image's absence rather than its presence. In a sense, we must invent our own narrative for the image, in order to reclaim a metaphorical sense of touch based on former tactile experiences.

This is the point where we start to translate the conflicting surface textures by imagining them as a series of essentially private and intimate physical experiences that begin to aid the growth of our pre-existing sensory archives.

Although all of the physical components suggested in the photograph are presenting us not with an illusion but with a real or staged shot, any sense of touch that is evoked becomes an imagined space that transforms itself each time the image is revisited.

The physical is manifested in our need to locate and access those elapsed moments in time where we were once aware that our bodies were experiencing an irrational and/or abstract sense of pleasure, thus externalising the image's material values. The subject of the image becomes divided between the viewer and the viewed, and it is in this departure that a correspondence is formed and the photograph becomes a portal for reinventing our sensory acuity.

Essay: *Untitled* by Fiona Candy

Photograph: *Bernsteinzimmer* by Saskia_Zeller_



The image rushes in as a rectangle of colours and shapes - a tonal palette made up of reddish, pink and terracotta hues, also creams, greys and black. There are materials of varying temperatures, surfaces and forms, both matt and shine, soft and hard, compliant and resistant, fragile and solid. The absence of an overt narrative makes me feel ill at ease: although static, there is wildness about the scene presented. There is a sense of portent.

A human figure is standing in the centre of a room emphasised by a partial rectangle of black above its head. I presume it human because of its shape and because there is a human leg and foot visible. The figure is shrouded and strange, muffled and anonymous under

several layers of large, pink towels.

It is night time, and the room is open to the depth of darkness beyond, through a gaping doorway behind the figure. The interior space feels inhospitable; it is brightly lit and sparkling from the high ceiling. It's obviously not a bathroom; there are tables and chairs. It looks very clean; the material qualities are suggestive of a health clinic or an institution. There is the disquieting presence of glass. The floor has the grid structure of tiles. Perhaps the room smells of cleaning fluid or of floor polish.

It is a peculiar, bizarre scene. There is an unsettling atmosphere and a tension between comfort and discomfort, safety and danger, comedy and the macabre. I feel sympathy and concern for the vulnerability of the pale, naked flesh in such a stark and brightly lit place. Yet this feeling of concern is simultaneously countered by the reassurance and sense of comfort brought by the pink towelling that envelops the figure. I can feel the soft, granular, rubbing sensation of the towelling on my shoulders. This touch is not received directly on my skin, but it is in my body, at my shoulders, and then down my back and arms. As well as textured, the towels are heavy and slightly clammy underneath.

I think from the leg's shape, and the nuance of its stance, that the body under the towels is male. I sense the breeze from the open doorway behind acting on his skin. A shiver. The sole of my left foot (not my right) feels the coldness of the floor and from somewhere I experience a shuffling, skidding sound of contact. His other leg is disguised behind a length of towel, which seems to pour downward from what must be his head. The top end of the towel may be held in his teeth. As I think of this, I feel the sensation of towelling in my mouth, and of the way that the loops of threads can be pulled longer, and how I used to enjoy the sensation of shredding towels with my teeth as a child. I can also feel my mouth stuffed and gagged. The weight of the man's shrouded body is lowered, his knees are slightly bent. I feel the tension of his posture empathically in my own body: I have a sense of a muscle stretch in my thighs, and knowledge of a tendon tensing in my calf.

There are other objects in the room: furniture and some odd looking frames, most of these are also draped and partially clothed by similar towelling. I am surprised to discover some sensory exchange when I look at these objects, as though they too are sensate, because I can feel the texture of the towels draped over them. The towels partially disguise and transform the objects, humanising them in some way. The cloaked frame structure, behind and to the right of the man, has a 'head', 'shoulders' and 'arms'. It has mystery - or fear - as though watching or emulating the man.

Without a face, or other explicit details of human identity, the male figure has qualities in common with the furniture. The clothed forms are connected to each other by these shared characteristics. The touch of the towels seems to mediate between human and objects, objects and human.

Inner mimesis lets me experience a rigid stillness in the man's posture. He may be disguising or hiding his body from immanent exposure, or is about to reveal what is under the towels. His posture suggests apprehension, as though something is about to happen.

I think the man is nervously scrutinising one particular painted metal frame, from under his hood of towel. This structure is completely bare. It looks like a pedestal table that is upside down. I can feel its cold tubular surface against my skin with my 'hands' from memory; it is unyielding, merciless. It may have the potential to inflict pain.

There is a sense of mania, paranoia or trepidation.

Author's notes:

I am a fashion and textiles designer. My research investigates clothing's impact on personal appearance and on the ways that the body can be lived and experienced. Although dress has a significant visual component, it is also a kinaesthetic practice that affects not just the eye but the entire body. Movement, body cadence, gesture, touch and kinaesthetic empathy are important topics in my work as routes to collecting wearers' experiences. However, I decided not to reference my specialist area in any direct way when writing the essay. So I've not used any footnotes or citations.

Making myself aware of the act of perception, and then conveying it with words has been hard work. I've been thinking and communicating with images for so long as a creative practitioner that this has instilled in me a belief that the written/spoken language is where I am least articulate. For me, writing rarely has the flowing, expressive ease I feel with a needle and thread, a pencil, paintbrush, or a camera. And yet, I've found writing this essay very stimulating and valuable for my own work.

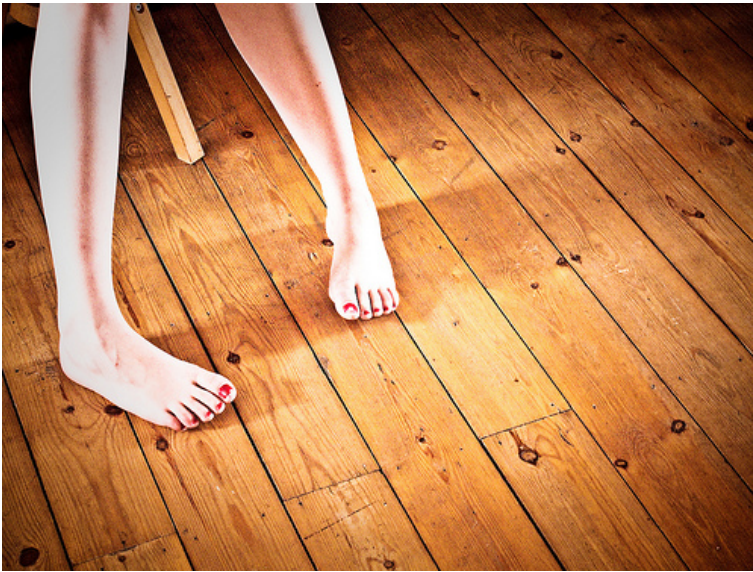
My method was as follows:

I viewed the image on screen and printed it onto paper. I noted down my initial reactions very quickly in the order they seemed to come to me. I later returned to each section to 'stitch' and 'embroider' more words into this first flimsy framework. I looked intently at the image, but also closed my eyes often, to do some body listening and visualisation, to track down where the various sensations were coming from. I worked and reworked the words and combinations of words several times. Exactly how the order of seeing and feeling has affected this iterative process of articulating perception is hard to unravel now, as it is impossible to encounter the image again for the first time.

At the outset I had some differing, hazy ideas about the possible meanings of the photograph, but I found that the more I engaged with its tactility and the other physical qualities referenced, the more these seemed to direct a single interpretation.

I wasn't sure at the beginning when I would stop, but then I got to a point where I felt I'd finished it. I have written the account in the present tense to give a sense of active viewing.

Essay: *Painted Toes* by Gem Ahmet
Photograph: *Untitled* by Denis Lefèvre



This photograph evokes a memory. I see myself touching the floor with my bare feet and at once I experience it physically. I wondered how such a connection between a visual and haptic experience occurs. In considering how I came to such a synaesthetic response, I sought to identify the ways in which my senses had been engaged.

Freud maintained, “that in mental life, nothing that has once taken shape can be lost, that everything is somehow preserved and can be retrieved under the right circumstances” (P7, Freud, 2002). If this view is to be upheld, we should all be capable of recalling any tactile sensation we have previously experienced via a visual stimulus such as a photograph. In my case, this

image, particularly the floor, does indeed evoke a sensory memory. It is at once the cool, smooth surface of a school hall, the creaking rigidity of Grandmother’s landing and the bruised sheen of the dance hall. However it does more than that, it also triggers an emotional response, which in turn enriches my haptic experience.

As a creative writer and performer, I feel that much of my reaction to this photograph is rooted in my familiarity and fondness of narrative. I instinctively view the composition as a story, both haptically and emotionally. I suspect this instinct may be enhanced by the presence of a human subject. In particular I find myself focusing on how the human body is engaged within the setting. For example I imagine the subject’s barefoot walk across the wooden floor to the seat. I experience the sensation of a light pinch in my toes while skimming the cracks in the boards, and I feel the window, the contrast of the cold, metal nails tickle my sun-warmed skin. I can only speculate on how the subject arrived to sit on the stool, but the walk I have described is part of my sensory story and I feel it when I view the image.

In many of his works, writer and Dramatist Edward Bond attempts to explain the human tendency to desire a narrative context. In particular he believes that we depend on the creation of stories to interpret and explain much of our lives. He wrote: “Stories structure our mind... and as it relates us to the world, the imagination that creates the story is logical and disciplined” (P3, Bond, 2000).

For me, the story begins in a sensory memory. The physical experience this provokes triggers an emotional response, which further engages me with the subject. I realized that I had created a story and a context to explain my reactions.

I feel there is a sadness and unease in this composition. The sensation of the floor underfoot and the awkward position of the feet create this impression. Traditionally, “feet represent stability and freedom. It was believed that they could draw energy from the ground” (P214, Fontana, 2003). However, this image shows the subject’s feet turned away from the ground. They seem indifferent, neither clenched, through tension, or spread, through enjoyment. Also the absence of a stable bond between foot and floor implies weakness or exhaustion, as it spares the foot the burden of bearing weight. However this is confusing when juxtaposed with the healthy appearance of the girl’s skin. The texture is smooth, youthful and unblemished. semantically. I conclude that she is either experiencing fatigue, and therefore choosing to adopt a lazy stance, or she is depressed due to a hidden emotional or physical injury.

As I view the picture and feel the physical effect of the stance, I begin to feel saddened. Physically, the light contact of foot to floor and the inward facing knees inflict pressure on the lower back. I feel the tightening of muscles as they strain to support this distorted posture. Then I experience another contradiction. The aesthetic

beauty of the setting should create a sensation of pleasure, but the cold shadow she casts implies she has turned her back to the warmth of the sun. Therefore her despondent stance suggests a degree of choice. It is at this point that my mind suggests a narrative, which links these semiotic elements in a way that explains the contradictions.

To me she is an injured dancer, wallowing in the tragedy of her situation. I considered three aspects of the image that lead me to this conclusion; the location, the subject and the subject's appearance.

In this case the subject appears to be a young woman sitting alone. Hairless, smooth legs hint to her gender and youth, as does the red nail polish, which has been carefully applied to her toenails. This simple act of vanity in turn creates another impression. I feel the awkward tension of keeping the foot motionless while straining to apply even strokes of red lacquer. The odour slowly disperses, assaulting both the nose and the eyes, singing the delicate skin with its fumes. The unpleasant effort of painting one's toenails is only endured if they are to be seen. Therefore my mind suggests a dramatic audience. The bruised, wooden boards, which are reminiscent of dance studios and rehearsal spaces, contribute to this idea. Finally, my feelings of a melancholic physicality lead me to deduce that she is experiencing the throws of depression because of an inability to perform her art. Thus, this completes a physical and emotional story for the girl in the photograph. Through these interwoven considerations I can see how my story came to exist. I have experienced the visual, haptic and emotional aspects of this image within my own frame of reference. The subject became a performer because what I saw in the scene caused me to experience my own haptic memories. She became injured and dejected because I created a story that would help me understand the contradictions I felt. Again this all grew from within my memories, the sensations I associated with this setting and the physical engagement of the body within it.

My personal conclusion is that my senses are inextricably linked. One cannot be engaged without affecting the other. Thus, seeing the girl, feeling the room and being the girl, all occur simultaneously. The sensory experience of this photograph even endures once I turn away from it. At this point the girl also turns away, she reluctantly shifts her weight onto her tired feet and draws a laboured breath as she pushes up against the rigidity of the worn floor. She pads heavily across the room feeling the sun's warmth on her back diminish as she exits, closing the door firmly behind her.

References:

- Bond, Edward. *The Hidden Plot*, 2000, Methuen, London.
- Fontana, David. *The Language of Symbols*, 2003, Duncan Baird Publishers, London.
- Freud, Sigmund. *Civilization and its Discontents*, 2002, Penguin, London.

Essay: *Untitled* by Gillian Allison

Photograph: *Sex is Accident* by Ben Grillon



This breathtaking image, captured in its' desolate environment, conjures feelings of serenity, seduction, aggression and violence. These emotions are conveyed through the haptic vision in the image and its tactile interface between the tangible properties and evocative subtext of the photograph.

The image is rife with physical elements which allow the photo to illustrate the bodily haptic experience to the viewer. The tangible properties comprise of central themes in the photograph as well as hidden ones. The significant focal features which narrate the story and express touch are largely communicated by the water which engulfs the suspended body of the protagonist. The sinister theme of the image implies the surface temperature of the water to be cold, but a non- descript cold. It's not the type freezing cold that penetrates ones' skin like sharp daggers and scars the bones or a chilling cold that causes a pandemic of goose bumps to erupt throughout the body causing your teeth to clash

together in a chatter while your short breath escapes from your mouth in a cloud of condensation. Nor is it a bearable tepid cold. It is simply cold. This leads to the surface texture of the water which would feel soft and wet as it cleanses the skin. There are also hidden tangible properties in the body of water .One can imagine exited insects fleeing round the dank environment teasing the water with brief bombardments which cause vibrations on the surface that penetrate the skin with a tickling sensation. The light breeze inducing a lapping effect on the surface of the water which dances playfully off the skin with gentle slaps. The weight of the water is interpreted as a hidden physical representation with the heavy weight of the engulfing body pressing down on the protagonist crushing her but yet supporting her as if laid out on a soft mattress and allowing her to float. It's wonderfully ambiguous.

Texture is also represented in the physical form in this photograph. The elasticity of the protagonists dress, which wraps and sticks to her body like the bandages of the mummy would feel wet and soft against her skin, while the surface texture of these clothes would at the same time feel heavy on her burdened skin with the sodden clothes clawing at her body. The image also depicts hidden tangible properties in the elasticity of weeds that cling to the protagonists' thighs as if glued to her, scratching and irritating the skin. The disturbing connotations of this image provoke goose bumps to the skin of the active viewer. A shooting shiver strikes your body when the realisation of the violence and aggression in this image penetrates your brain causing a chain reaction of volcanic goose bump eruptions spewing out of your skin with the plume of a single hair radiating from each one. This culminates in a clammy molten sweat encasing ones body like the exosphere that hugs our planet and a manic thudding heart which leaves one winded and breathless.

The image also evokes assumption to the sensation on the skin of the protagonist. The stagnant environment which accommodates the image can muster inferences about the clammy still air radiating her skin which would feel sticky like the oozing sap from the stem of a snapped flower and its viscous heat causing an ever so slight choking sensations as it's breathed in. This interpretation is ambiguous as the protagonist is appears lifeless. However one can imagine the touch sensations that the air would evoke on the skin.

As an active viewer of the image touch transpires in physical and metaphoric elements. The mental image evokes a physical reaction in the viewer that one could reach into the photo and run curious fingers up the protagonists' cold wet thighs in an act of perverse seduction and creates tangible memories. One may also reach in to touch the protagonist in an act of protection and empathy, peeling the sticky clinging weeds off her legs and pulling down the soft sodden material of her dress to protect her innocence. The manner in which this image grips the viewer instantaneously is remarkable and is partly achieved by the metaphoric form where touch takes place. The active viewer is winded by conjured up fantasies of the protagonist frantically throwing out a lifeless arm from the image and grabbing hold of your wrist , squeezing her

emaciated hand so tight that the pressure in your wrist builds up until it bursts, like the aching bang of an over inflated balloon. That single tactile interface, that desperate grip, conveys everything to the viewer.

The ironic occurrence in this stunning image, ripe with haptic inference, is that the protagonist seems to no longer have the ability to experience touch.



This afternoon is that sunny cold that people keep telling me is typical in April. Bea tells me more eagerly than necessary that it is already 26 degrees in Szeged. I am sure she exaggerates but it makes me feel more at home knowing my wife is unaffected by the land and sea between us. She still tries to be right more times than I am. I wonder if she understands where London really is and how long the journey home takes. Not that I could take an average just yet; the one time I went home it felt like I was travelling to another continent.

Nicholas was on his mobile phone nearly all day today, I am surprised he could find another hand to hold the nails. He's not said more than five words to me, but I know he's sleeping with two girls and won ten pounds in the lottery on Saturday. Ten pounds he immediately lost on the dogs. He has no idea who I am. Although he's probably spent more time looking at my backside than my wife has. I overheard him talking to his mate in the cafe today when we went for a bacon sandwich. He called me 'another bloody Pole'. How long will it take before I'm not foreign anymore? I don't think many people would want this job I supposedly 'stole' from the British. It gives me cramp in the knees and makes my hands swell up. Every night I get home and soak them in salt water while the baby shouts her new word 'no' over and over again.

My most intimate relationship is with a boy younger than my son who holds nails for me as I clean steps. He does not know or care about the years I studied, the weeks upon weeks of no sleep and arguments with my wife about things as ridiculous as the colour of my tie. Or the day I thought about giving it all up, or why I decided to leave Hungary to come to London, telling myself I was going on a necessary adventure.

This is sounding like a rant I know but that is not my intention. I could go home anytime you seem to shout, frustrated and angry with my complaints. I suppose this is true, my home is in the same place it has always been, my family are not tortured by war or famine. But my responsibility is to provide for the people I committed myself to provide for. What use am I sitting at home no work to go to each day? It is not fair for me to watch Bea make a bag of potatoes last a month using every type of culinary art you can, or more likely cannot, imagine. A Hungarian's potato is his castle but man cannot live in castles alone.

When I lay on the mattress each night courting sleep, listening to the police sirens glare in and out of the window, I ignore the pull of my last cigarette and try to make sense of it all for another day. The pros and cons are clear, but I have to hold my breath and still every part of my body to try and calm my mind. Otherwise one of these nights my thoughts will escape all rational control and take a bat to my brain in the night.

Essay: *Untitled* by Mara Jevera Fulmer

Photograph: *Untitled* by Kramer O'Neill



A physical experience is relayed through a photograph of swimmers in the ocean surf. But does the photograph convey a physical image if the respondent cannot see? The image that I write about has only tones of black and grey yet conjures a paradisiacal world of colours from memory, an azure sky, a turquoise sea. But to an unsighted person, does one have mental images of colour? And would they be based upon some kind of familial memory borne from the womb or an earlier experience before sight was taken? Without knowing the answers to those questions, I choose to conjure the image from other senses, heightened by the absence of sight.

The tactile nature of this image is a cool wetness that stings by the physical effervescence created by the wave break. The water hits us with a rush, bursting against our bodies with a physical weight that almost knocks one off their feet. With no hint of land in the field of vision, we are surrounded by water rushing around our bodies, one stronger man holds high the arm of a smaller but invisible host.

The angle of the photograph's composition confirms this as it is close to the water's surface looking up upon the glistening bodies in a dusky sky, the sun's light off our right shoulder, the source unseen but low in the sky. We are warmed by a hot tropical sun but the heat is assuaged by the slightly cooler but still warm tropical waters.

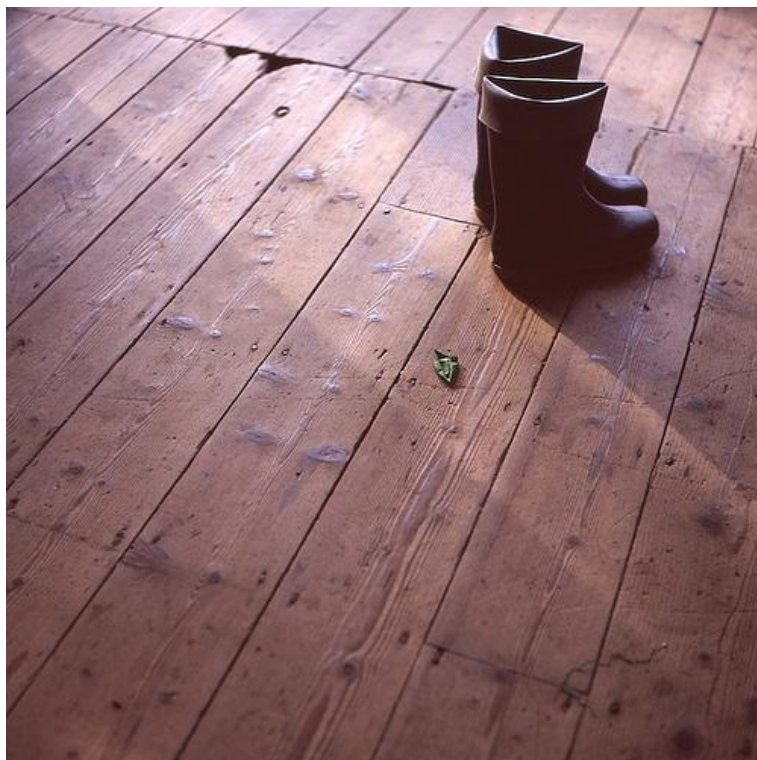
The water is not silent and instead contains a rushing sound that ends in a giant whoosh that is followed by an immediate intake of the breathing giant before it lets out another deep cleansing breath.

Other sounds accompanying the breaking waves, including sounds of laughter and screams of delight as bathers fight the waves' impact and try to channel its power as they ride the pounding surf. The constant pounding as if from a great drum and percussion set follows one upon the other.

Other senses are not abandoned as the image of the ocean cannot exist without the smells and taste of saltwater as it splashes into our mouths, noses and eyes. We smell the ocean's edge as the surf pulls back from the shore to reveal shellfish rushing to hide in the beach sand before the waves return to pound the earth again.

The image contains a myriad of sensual assaults far beyond the visual. For, while a sighted person may be distracted by a visual rush of tonal qualities that dance in bubbling staccato across the frame, one may conjure a far deeper image through a coloured text that describes the experience of the other four senses.

Essay: *Untitled* by Michael Szpakowski
Photograph: #282 by Emma_Bennett



We **see**: a low angled image of bare floor boards with a pair of boots in the top right quarter. Extending from the leading diagonal to the far edges of the photo but interrupted by boots and shadow is a broad shaft of sunlight, not weak but not strong either (There is a further hint in shadow of something or someone not in direct view, just beyond the top centre boundary). The angle of the photograph (which both visual inspection and guess work and trig suggest was taken from about the height of a 9-10 year old child) creates a kind of skewed grid with the edges of the boards. Slightly right of the centre of the image is a single leaf – still green but folded, dried, crinkled. In the bottom right corner, out of focus, is what appears to be a piece of string (a shoelace?). There is no sign of any trail of dirt or moisture from the boots.

What is striking is how relatively easily enumerable the elements of this image are.

I **ask**: trace of events or still life? Detective or art critic?

The sunlight. Despite its relative weakness the pattern of light and shadow immediately conjures memories and dreams of a world before language. Moving from the shadow into the light. The warmth suffuses one's body. Moving from the light into the shadow for relief. Lazily observing the inviting pool of darkness from the light.

I **put** the objects in order of human universality. The sunlight is pretty much so; the leaf almost; *some* covering for the feet, yes, but *boots* and *boots of this kind*? A floor – yes, of course, but *this one*, with boards – that have seen better days - and nails and whatnot. And then *that* particular atmosphere – for me, *you too*? - of periphery or abandonment...

The boards bring back childhood memories of splinters in the hand. More recently, of sanding the floor of my daughter's bedroom. The roughness of the surface on the bare knees. The occasional dull protuberance of a nail or other fixing. The wobble of a loose board. Dust.

I **wonder** if the boots are leather – the tops look supple enough but there is a stiffness to the part where the foot sits which makes me wonder.

I **recall** the feel, the smell, of soft leather. I remember the child's proximity to the feet and footwear of adults and the feel of my grandfather's Trilby hat and Sunday shoes on my head and feet (a photo was taken and I'm uncertain whether I now remember the *occasion* or the intermittent glimpses of the photo at my parents' old house).

I **recall**, too, the inflexible and spiky cold of the linings of the Wellington boots of early childhood and later, tight on my feet, the faux leather snow boots with the artificial fur lining that made my feet sweat so copiously. More generally I remember the feel of feet encased by new or ill fitting shoes and, in blissful contrast, my current walking boots, almost supernaturally comfortable.

I **recall** the little I know about leather – a friend lives in a former tannery and he showed me the piss pits, which now form part of his garden. Now, unavoidably, I think of accidentally pissing on one's shoes or boots.

Meyer Schapiro and Heidegger – an *argument* about the world through a representation of boots¹.

The leaf. I think of lime, bay or curry leaves and how, green and dry both, they crumble in your hands as you take them from jar to cooking. The memory of the scent of each follows immediately. Then the taste.

The out of focus quality of the string/shoelace - and that uncertainty - summon a memory of wetness (re-fastening shoelaces in the rain or, worse, finding them *unexpectedly* wet. See above; *boots*) There's an echo here from childhood, too, of worm and centipede – an *unclean* creeping thing.

Hearing. Not only touch and smell and taste – the scene suggests specific kinds of sound. We're in an empty room of a house, or an outbuilding. If there's noise we're most likely at one remove from it. (Distant traffic; muffled voices; the calls of birds) Or it's right on top of us – drills, hammers... The lack of a carpet (and possibly bare walls) alter such sounds we do hear.

There's an additive process going on – each newly evoked sense-memory is conjoined to those previous to yield a rich and unique new accumulation which cues further memories. And memory doesn't distinguish between the senses, nor between the cognitive and affective.

Not only additive: there's a feedback effect, arising with each new state of the developing complex; triggering, in turn, fresh resonances which, like those of a slowly fading bell, or stone in a pool, ripple outwards (and, actually *inwards* too, leaving behind the metaphor).

And ineluctably, there's the consciousness that someone has *asked* us to consider touch. **And**, question asked, it's impossible to become innocent of it again. If we had looked specifically for sound or taste we'd find them.

Because the image has access to everything we've seen or felt or thought and also to everything we've read or imagined or learned from books or films or other people, *who in turn*...

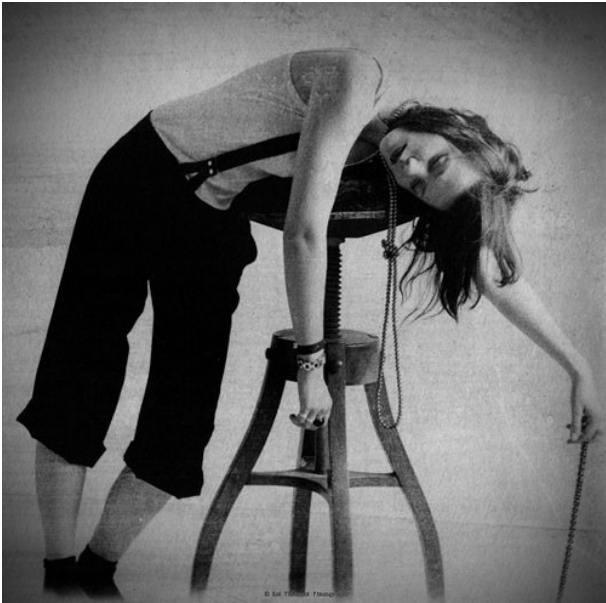
Any observer of the photograph for whom it *means*, evokes memory and feeling, will be sentient and embodied. Any sentient, embodied observer will meet meaning, memory and emotion. Each set of these will have commonalities and differences, but all will go beyond enumeration of what is *seen*.

A God, on the other hand, would *understand* everything or nothing. The same thing.

Author's note: Thanks to Edward Picot for reading and commenting upon an earlier version.

¹ Schapiro , *Meyer Theory and Philosophy of Art: Style Artist, and Society - Selected Papers*; 4. New York: George Braziller, 1994, pp 135-151

Essay: *Untitled* by Natasha Long
Photograph: *Opium* by EniTurkeshi



The physicality of this photograph is at once serene and violent. The image comprises a woman slumped in a discarded-rag-doll posture onto an old-fashioned adjustable stool. She is dressed androgynously in black rolled-up trousers, black braces and a white vest; an outfit that plays with gender as well as setting. Though the woman's face, hair and make-up are relatively modern, her clothes complement the aged stool and the grainy, black-and-white nature of the image to allude to the working days of manual labourers during the early 20th century. The woman's heavy slump onto the uncomfortable stool could be read as the exhausted collapse of a hard-worked individual. The flop of her arms indicates how heftily she is balanced and suggests the painful pressure with which the wooden seat must be pushing into her left breast – the only part of her body touching it. However, the relaxation in her facial features indicates that delicious desire for rest seen in children dozing in car-seats and travellers napping on trains: that swamping of an overexerted body that

allows the sleeper to disregard all physical discomfort in favour of the pleasure of momentary rest.

This reading of the image, however, overlooks some of its more complex elements. The woman's hair is loose, she is wearing jewellery and her mouth is stained with lipstick. These factors work against the simple androgyny of her clothing and layer the image with a more sexualised tone. Coupled with the long, knotted necklace hanging like a noose from her throat and the chain draped from her left hand, the woman's braces now seem constricting, like items of bondage binding her feminine body in masculine clothes. Equally, the thick screw that raises and lowers the stool can be seen to extend violently upwards, penetrating the woman's chest. While her breast is being flattened by this torturous-looking instrument, her vampily lipstick mouth curls in an almost smile, suggesting enjoyment and thrusting the image into dialogue with issues of sadomasochism. Though there is no male figure present in the photograph, the phallic-shaped stool is framed in the very centre of the image and displays its dominance through its physical solidity compared to the liquidity of the woman's posture.

Though the woman is technically the animate object in the photograph, she seems more like an inanimate puppet, either of a sexualised nature with her chains acting as strings waiting to be pulled by the gaze of the (typically male)¹ observer, or of a softer comedic nature with her rolled-up trousers and the grainy quality of the photograph referencing droll Charlie Chaplin sketches. Either way, the woman's role is passive; her physicality is dependent on the immovable stool acting upon her senses and the voyeuristic observation of the viewer.

The woman's right hand, dangling parallel to the stool's screw provides the image's most discordant feature: rings and bracelets adorn it in a performance of both femininity and modernity. The bracelets – one metal and chainlike and the other a black band – could be seen as restraints like the braces, but they act to break up the smooth, vulnerable skin of her arm and lend her a kind of rebellious power. While slumped, the woman might be weak, drugged, sleeping or entranced, reliant on the solid, unmoving stool, but there's a layer of dormant power to the image that makes one feel, if the woman were to stand, she would be the object to fear: a porcelain doll brought to life, a possessed child or simply a teenager ready to start a fight.

¹ Mulvey, Laura. "Visual Pleasure and Narrative Cinema" (*Screen*. 16.3 Autumn 1975.), 11

Essay: *Haptic Visions* by Sally Butcher
Photograph: *Untitled (2)* by Denis Lefèvre



It was Susan Sontag who first ascribed photography with 'an ethics of seeing', teaching us a 'new visual code' which reflected its power to affect the way we see and interpret the world (Sontag, 1971:3).

All viewers, of course, bring with them their own preconceptions, their ideologies, memories and experiences, all visually recorded and categorised within their own mind's eye. Hence photographs will always resonate differently, each person recalling different visual images in differing ways with respect to the new image they are seeing. But is it possible for a photograph to resonate with viewers beyond the mind's eye; beyond the visual; beyond seeing? Are some photographs situated beyond a system

of visual signification, communicating information that can only truly be read (that is, felt) on a more physical level? Are there perhaps alternative strategies of visualisation offered by some photographs that encourage a different level of interpretation?

A photograph is a smooth two dimensional object, unlike say, a painting, which may offer some insight into the feel of the surface texture of the object it depicts. In this particular analysis we do not even have access to the photograph itself, merely an electronic reproduction, and yet as an active viewer of this image it seems to evoke a feeling in me, one so strong that looking at it demands something more than merely seeing. It appears to induce an actual physical bodily reaction, creating a strange sense of "touch", both metaphorically and physically, in my response. Indeed, this image seems to convey genuine properties of tangibility. I can feel myself touching the material, and the material touching me, just as the figure is both touching and being touched within the photograph.

Just looking at this image, it seems possible to literally sense the "tightness" of the material as it clings to the contours of the male figure. You can feel the discomfort as the material touches, pulls tautly around the shoulders, the seam tugging across the back of the neck, arms trapped in this tangled straight jacket. It slowly begins to smother, it seems to be touching you, holding you, its grasp getting tighter. Its clutches are strong; the more you struggle, the more it grips you. Your breathing intensifies as you become aware of the material covering your face. The nylon-like fibres scratch your skin, you hear it crackle past your ears, the static energy building, intensifying, heat resonating round your body as you try to pull it off, your hands fighting the knotting and binding, but the rubbing, and the itching, and the pulling, it won't tear, it won't break, it just keeps growing, stretching...

How can a viewer become so absorbed in this exchange of information through sensation, that it seems possible to mentally, even physically, become re-situated as the object of the image we see? And if, as Sontag stated, photographs are an appropriation of reality, 'turning experience itself into a way of seeing' (Sontag, 1971:24), how can photography turn it back into an experience again, especially if the viewer never experienced this reality in the first place?

This image also seems to convey some metaphorical significance through touch. The image is quietly provocative, it captures our gaze. The stripping suggests an intimate invitation to the viewer, rousing feelings of desire to make contact and yet the lingering costume acts as a screen to the onlooker's touch. A slightly fantastical image, this grotesque, almost mutilated, semi clothed figure, is as tantalising as Houdini's latest escape, caught in a moment of burgeoning excitement.

It has a strange disturbing power that is both appealing and disturbing, unbinding our unconscious desires and fantasies. The victim tries to peel off the layer of clothing but it continues to stick, like a sodden swimming costume refusing to release its suction from the contours of a wet body. We the voyeur, watch the victim struggling as he looks out through a haze of dappled vision, the fibres finer and sight clearer where the material is fully stretched. But the guise is impenetrable. It seems tied onto him, almost part of him, mingling with his own limbs, like a snake shedding its skin or maybe perhaps a caterpillar building its protective cocoon; it reflects the mutability of the human figure. It seems to be generating its own layers, pulsating out of the body, enveloping him, encasing him, embalming him.

It is this dissolution of boundaries through the *content* of the image that is also reflected through its *form*, demanding a response from the viewer which transgresses the boundaries of representation. Here, looking becomes a kind of visceral contract as we feel the immediacy of the sensation resonate with our own body, a device fully exploited within the horror film (see Shaviro, 1993), merely touching the surface in this image. Indeed, it seems to be this literal and metaphorical stripping which allows for an exchange of touches and begins to open an articulation of space for new meanings of photography.

REFERENCES:

Shaviro, S. (1993) *The Cinematic Body*, Minneapolis, University of Minnesota Press.

Sontag, S. (1971) *On Photography*, London: Penguin.

Essay: *Untitled* by Savvas Papasavva

Photograph: *Untitled 67* by Andre Berube



In this picture the photographer has caught a little monkey, probably six plus years of age, in the act of drinking water from a fountain. We can't see his lips or the water itself but a dark gleaming patch along what looks like a wooden post seems to be a liquid and its either water or he has developed a taste for creosote.

The young monkey's eyes are squinting, if not closing or closed and he is concentrating on drinking, leaning his body slightly forward, chin slightly up so not to make a mess. The water which has somehow managed to flow along the side of the fountain takes up a third of the width of the post and the little monkey is practically the same height as it. Prints of his fingers can also be

seen where he has first held onto the wet part of the fountain and then moved his hand forwards and then back again.

But the little monkey also looks like he is kissing the post and in fact that was the first thought I had when glancing at the image before rationalising a fountain. And it is an awkward kiss I might add. If he tried to kiss a little money girl in the same manner that he drinks water, it may sound poetic but with a face like the one he is pulling, she may not be impressed if she peeked. The expression of concentration is so firm on his face the post / fountain doesn't stand a chance.

I suppose the tangibility of this image comes about from the double take when looking at what is happening within the image. That is with careful consideration you can deduce the young monkey is drinking water but at the same time the details which jumps out the most are the one most similar to kissing. His hands are roughly at the right height to be places on the shoulders of a little monkey girl just to add another descriptive sentence. Every individual who I have shown this image to also think initially he is kissing a post because maybe that's what kids do or it's something in the body language?

I suppose not everyone's as lucky as the young Macaulay Culkin who in the film *My Girl* gets to practice kissing "like they do on TV" on the back of his arm.

Essay: *Untitled* by Susannah Worth
Photograph: #498 by Emma Bennett



Look at a photograph or a painting on a wall, and become aware of your eyeballs jumping around in their sockets as you first take in the image and then inspect the surface. To explore a sculpture, move; perhaps patrol around, now up, now down. With sound art, become conscious of uninstructed limbs, and if it's loud, try to scratch the unreachable tickle in your ear. And inhale; musty museum dust, white cube walls, oil paint, cut wood, smoky tar, metal rust. Fulfill a further sense with the gallery café, and only touch remains ungratified. Do not touch the art, the art will touch you.

But here is a photograph, an image on paper for me to pick up and to have and to hold. This personal space, the page, introduces me into this black and white scene. Shades of grey indicate a physical presence that, reassuringly, instructs my logical place in relation to it. Assuming the place of the photographer, I am instantly implicated. I am a crouching voyeur, hiding

behind the indistinct wall that makes up the blurred lower half of the photograph. It could be the back of a camera; I can make out a central white circle, perhaps the light through the viewfinder. Looking upwards at the focus, through the lens, the image goes from soft blur to soft fur.

The photograph captures the image just as I feel compelled to capture the girl, to reach out and touch, to confirm the connection with another person. Besides a glimpse of throat and thumb, there's more animal than girl on show. A covering evocative of glamour and the wild, perhaps protective, probably provocative, but surely an invitation to touch. It feels instinctive. Fur is nuzzling, stroking and preening; its weighty layers and folds are animal, warm and vital. But it is also writhing sex kittens and outdated femininity. It is a breathy word, a purr, that flits across the lips.

Our word, fur, originates from the Old French *forrer*, 'to line or encase'. Its roots do not lie in reference to the hair of a living animal, but in the act of wrapping and enrobing. This outer layer lures my senses, but it is the fellow being within that I am reaching out to. Though soft and incomplete, perhaps this super-layer is intended as disguise, defence, a deflection of a gaze upon the female, the passive muse, a concept out of touch with modern thinking. Are her hands on hips, defiantly distant, resisting my grasp? Or do they steady her own camera, poised to respond, retaliate. With her lenses hanging around her neck, peering outwards, I wonder if there is something she is trying to capture that she cannot quite manage with her absent eyes.

The flecks and imperfections on the picture surface attract my attention. Whether mistakes or retro artistry, I want to run my fingers over them, partly to see if they brush away. I am once again aware of myself clutching this photograph in my hand, momentarily united with a past instant.

Essay: *An Under-Cover Story* by Zeynep Dagli
Photograph: *Lenin* by Lucas Compas



Surface texture and weight of the fabric, the pull; hardness of the long chin, shape of the strong facial bones, vulnerable skinny shoulders; the placement of this man under the cover in total darkness; exposed to little light just on to his form and his burden all occupy the viewer to an extent where one is confronted not only with physical but also metaphorical vigour/exercise.

The more I stare at it the more I become aware of the pressure on the cloth and the uncanny¹ feeling that is created by it. The image forces/informs me that there is something to conceal, remain hidden, kept from sight, not to be seen or touched but it still touches and disarms its viewer.

What evokes the touch without the real sense challenged is his posture under the cover. The pull on the cloth makes me feel defenceless. The photograph offers something known/recognisable outside. Its familiarity is a ghostly image. But with its hidden, repressed knowledge it is another story inside/undercover. With the unknowledge, the unfamiliarity and the why questions one welcomes doubt, suspicion and speculation which the haptic qualities and tactile properties of the image expose/disclose/provoke.

He might be even wearing a mask underneath that cover. Imitating a quiet scream? He is very much alive. Or somebody might be pulling the cloth underneath. Unless the man is just pretending to hide his own anguish (by pulling the cloth over himself with his fists). Maybe even ashamed to be hiding (or being in anguish)?

However who covers himself (or him) is the same person who wants us to make out his features, his intensity and anguish. I am drawn into the photographer's decision.

The image itself is legion. Apart from the viewer, there is the man under the cover; there might be another who is pulling it and the other eye who is documenting it. It feels crowded all of a sudden but the photograph is quiet. Almost morbidly quiet because the man under the cover is watching. His eyes wide open, his mouth seems half-open, speechless. He even appears to be curious -in anguish. His approach is very familiar and unfamiliar at the same time.

The identification with the depicted reality (of the image) the viewer cannot be touched by the man under the cover. I, the viewer, cannot touch him either. I am not allowed to remove the ambiguity. It disturbs me. Yet it still captivates me to the point where I identify with his attitude. If one is to touch, one would uncover him and encounter his scream.

The physical (quality of the image) represents repression. There is no claim to be done. My intuition only supports the uncanny feeling that is created by the tactile properties of the image. But it is intimate, hidden. I do not feel touched. Rather I feel estranged, withdrawn from it by the authority of the photographer. If there is the pull for the man in the image, for the viewer it is the push which operates like a counter-touch.

¹ The word uncanny is quite dangerous to use/refer in academia without explaining it properly. According to Freud uncanny is something 'secretly familiar' which we can neither define nor explain, 'which has undergone repression and then returned from it, and that everything that is uncanny fulfils this condition.' I believe that there is a relationship between what makes one experience uncanny and what makes one feel touched when viewing some of the haptic images like this one. The photograph, for me, evokes disturbance, a repressed• hidden choke that feels both familiar and unfamiliar at the same time. Reconfirmation in reality would create a 'conflict of judgement.' Freud, S. "The Uncanny" (1919), London: Penguin Books

Yet again I'm implicated in this conflict by the tangible quality of the image. I can neither deny nor acknowledge the touch. Maybe what is represented here is what one would like to cover too, i.e. bad memories, quiet screams, sadness, anguish...All are stimulated within the body with the help of the photographer's choice (of colour, light and structure). Reflective apprehension (of the photographer, of the man under the cover and of the viewer) answers the threat of pull and push with the uncanny experience. The image itself speaks a kind of desolation, an exposure encouraging a powerful encounter and a sense of counter-touch. (If touch is to be defined it is definitely a hidden punch delivered with the fist, uncompromising.)

To recuperate, the photograph communicates by putting the viewer into a kind of trap, concealing the touch by shrouding us under pressure just like the man in the image.

Darkness for the man under the cover, darkness for the viewer. What remains is the 'secretly familiar' texture.

**APPENDIX 8: PUBLISHED WORK IN THE 'TOUCH IN
MUSEUMS' BOOK**

**Tactual Explorations: A Tactile Interpretation
of a Museum Exhibit through Tactile Art
Works and Augmented Reality**
Isil Onol

This chapter introduces 'Tactual Explorations' as an exhibition concept and analyses the performance of its first research-based inclusive public event which took place in Huddersfield between 29 September and 8 October 2006. The event included workshops, talks and a tactile exhibition focusing on one museum object. At this exhibition, the selected object, the bronze bust of Sophocles from the British Museum's Greek and Roman Antiquities collection was represented tactually by ten artists, through one haptic simulation and nine supporting art works to enhance the physical information. This chapter investigates the effect of a haptic display which is surrounded by physical art works representing the tactile properties of the museum object and discusses a new method of a tactile interpretation. A potential series of exhibitions is suggested, which are focused on individual museum pieces, and where visitors engage with a number of physical and virtual works in order to study the original. The chapter first examines the visitors' interaction with the exhibition as a whole, and then focuses on the results gained from the engagement with the haptic simulation alone. The comparison of both results is presented, not to replace the traditional museum display, but to enhance the information conveyed about the exhibit to a wider, more diverse audience.

'Tactual Explorations' forms part of current PhD research that is investigating the topic of haptic interactions with museum objects, under the supervision of Steve Swindells from the University of Huddersfield and Ann Marie Shillito from Edinburgh College of Art.

Introduction: 'Tactual Explorations' as Tactile Interpretation

'Tactual Explorations' is the title of research-based public events that focus on individual museum objects and create a tactile interpretation of them through several artists' virtual and physical works. These works are not simply inspired by but directly based on the selected object's tactile properties. As a pilot study, the first of

these events took place at the Northlight Gallery in Huddersfield, UK, between 29 September and 7 October 2006. The event included relevant workshops, talks and a tactile exhibition that interpreted the bronze bust of Sophocles from the British Museum's Greek and Roman Antiquities collection. Ten commissioned artists represented this selected museum object tactually with one haptic simulation and twelve supporting art works to enhance the physical information available to the viewer (see Figure 6.1 and Table 6.1).



Figure 6.1 Tactual Explorations Exhibition at the Northlight Gallery, Huddersfield.

This project formed part of my practice-incorporated PhD research which is investigating the use of emerging (haptic) technologies and smart materials, their implementation into museum environments for object interpretation and also investigates solutions to create access to precious museum pieces without denying their conservation factors. The research outcomes are expected to serve as a foundation for a new interface, and its initial outcome will be the production of an interactive-haptic museum display that could be opened to the public.

For most curators, objects are the most important elements that can give museums their value and they would argue that without these artefacts, the museums would have no meaning. Thus, the presentation of these objects to the public is the actual starting point for 'Tactual Explorations', rather than acceptance or denial of current practices of museology.

Turning a 'natural object' into a 'humanly defined piece' is one way to explain object interpretation (Pearce 1994). A 'strong interpretation' has the potential to transform the meaning of the object completely by bringing out something that was not there in the first place (Carrier 2006), whereas inviting artists into the process

Table 6.1 Commissioned artists of the pilot study and their art works

<i>Artist's Name</i>	<i>Artwork Title(s)</i>	<i>Materials and Dimensions</i>
Tom Ainsworth	Expression	Cast silicone, black pigment and metal 14 cm × 10 cm × 2 cm
	Hair	Cast silicone, black pigment, metal and hair 14 cm × 10 cm × 2 cm
Carolyn Alexander	Unravelled	Latex 67 cm × 11 cm × 9 cm
Louise Atkinson	Hairball	Hair, bessian, cotton and stuffing 70 cm in diameter (approx.)
Lynn Cox	The Wiry Old Man	Wire 30 cm × 30 cm
Deborah Gardner	Viscid Head	Wax 75 cm × 63 cm × 43 cm
Iail Onol	Haptic Bust of Sophocles	Data on computer
	Surface	Brass 30 cm × 27 cm
Murat Ozkasim	Takes a lot of Licking	Bronze and chocolate 8.5 cm × 7.5 cm × 6.5 cm
Megha Rajguru	Sophocles Circa 2000	Hair and plaster 39 cm × 22 cm
John Swindells	Inverted Head	RTV polyurethane 25 cm × 20 cm × 23 cm
Zoha Zokaie	Contours of the Face	Aluminium wire and paper, alginate, sand, three-part work, Each 30 cm × 35 cm × 30 cm
	The Tale of its Touch	Copper sheet 40 × 60 cm

can enhance the way surface information is conveyed rather than reinterpreting the meaning. 'Tactual Explorations' aims to use artistic approaches to decipher visual information and to present a tactile interpretation of a museum object – not to replace it, but to enhance the existing information for all visitors regardless of their background or needs.

Objectives: Inclusive Design and Accessibility

Visually impaired museum-goers require better and wider access to museum collections and, now that government legislation officially recognizes this need (Candlin 2004), it is even more necessary for researchers to work towards better, more inclusive and more meaningful access to the museum exhibits for such visitors.

The concept of inclusive design is very important to my research and its practice. Tactile interpretation in museums has the potential to revolutionize the museum experience and increase access to the object for everyone, including physically impaired visitors. One of the first problems that we encounter in common 'inclusive' solutions in the design sector is that they tend to exclude part of their audience in order to include another part. A solution that creates further problems can still be considered as a solution, however not an ideal one. For instance, creating touch-only museum interpretations would only address a small number of visitors; this would therefore be against the idea of inclusive design (Pearson 2003: 41). Even though 'Tactual Explorations' emphasizes touch as the main sense, the tactile exhibition of 'Tactual Explorations' cannot be classified as touch-only. All exhibits can also work as stand-alone visual art works, vision on its own, however, does not define any of them. At all times, visitors are invited and encouraged to bring other senses into their experience to establish a multisensory interaction (Figure 6.2).



Figure 6.2 Visitors examining Lynn Cox's artwork 'The Wiry Old Man'.

Results of previous user feedback exercises have indicated that the addition of tactile feedback as a separate interface tool to a visual display can enhance the learning experience and increase the accuracy of the tactual perception. At the same time, the freedom of movement and the use of a tactile interface can create the illusion of one-to-one interaction with the original precious museum object. These exercises, however, were set in a controlled research environment and did not provide enough variety to test how inclusive and accessible an exhibit could be. In order to collect the necessary data for the research, it became crucial to create a public event that was set in real-life conditions. More precisely, a museum object was needed that could be examined by random visitors – not necessarily with the questions of this research in mind – if realistic outcomes were to be achieved.

In order to fulfil the requirements of an inclusive project from all points of view, it was important to create an event that was useful to people, not just to my research. The project proposal, funding and sponsorship applications called for volunteers for different roles; the artists' brief and the publicity materials were all produced with inclusivity aspects in mind. Commissioned artists were selected according to their research background, use of accessibility as concept and practice in their previous work and their approach to the artists' brief on their proposals. The curation of the exhibition involved paying a great deal of attention to the accessible materials (Figure 6.3).



Figure 6.3 A young visitor examines Deborah Gardner's wax artwork 'Viscid Head'.

The gallery room allocated for this event was larger than that usually provided for exhibitions of this size and all physical barriers were removed. This allowed additional space for wheelchair-users and visitors with guide dogs and other aids to walk around the exhibits in comfort. Attendants were available at all times to rotate the exhibits or place them on a lower plinth temporarily if visitors required this.

Access to written information was provided in alternative formats for visitors who preferred or needed optional access. An audio guide was produced for a variety of platforms. This guide included extra help and an audio tour that covered all exhibits and artists' information. The audio guide first explained how everything was set up in the room (i.e. where on plinths the Braille labels could be found and how these labels corresponded to the objects discussed in the audio tour, etc.). Then it moved on to the four-part audio tour. The first part of this audio tour introduced the project; the second part discussed the individual art works; the third part provided short biographies of the artists; and the final part provided information about the original Sophocles bust in the British Museum. Listeners were able to skip parts, or re-listen at any point during the guide. A listening point with this audio guide was installed at the entrance. It was also available for visitors to carry with them in the following formats:

- As recorded tapes to use in old-style Walkman™ personal stereos that we marked with Braille labels (some visually impaired people prefer using this type of player with large buttons);
- As audio CDs to be used on the CD players we provided (or visitors' own players);
- As various digital files to download from our computers into the visitors' MP3 players or notebook/laptop computers.

All labels, instructions and written information, including the exhibition booklet, were also available in Braille. One of the commissioned artists, Lynn Cox, is also an access consultant for museums, and she provided Braille labelling for the art works and access consultancy for the 'Tactual Explorations' event as a whole.

During the exhibition, special needs schools arranged group visits on different days. These groups included people with cognitive, physical, and visual or hearing impairments. Their attendance at the event enabled a truthful observation and testing of the access and facilities provided by the event.

The project and the pilot study intentions were to raise awareness of issues relating to 'inclusive exhibits' with following main objectives:

- To produce multisensory exhibition pieces;
- To use Augmented Reality to enhance information, not to impress the visitors;
- To provide an opportunity for people with limited or no sight to have access to art exhibits;

- To explore the main and hidden aspects of 'touch' in an object that is exhibited;
- To analyse and represent the tactile information (of an exhibition object) by layering the sensory properties involved and individually highlighting these properties;
- To show that accessible gallery experiences can be achieved on low budgets;
- To bring precious exhibits in the larger museums to visitors living at distance from these establishments.

Production and Design Process

A project as ambitious and large as this required extra funding and sponsorship for the first event to be realized. Metropolitan Works Creative Industries Centre in London, who agreed to become one of the sponsors of the event, supplied the expertise and allocated the use of their £60,000 Faro Laser ScanArm to scan the bust of Sophocles into a CAD program. The University of Huddersfield funded the artists' fees; Oxidise, a London-based design company, developed the website; many volunteers, who are experts in their subjects, offered their services free of charge, and funds were raised from public and private businesses.

For the exhibition, each artist created an art work or set of individual pieces to represent their chosen tactile information from the surface of Sophocles's bust according to the guidelines given in the artists' brief. By paying particular attention to accessibility, each piece was designed to be explored mainly (but not only) by touch. In short, the purpose of the exhibition (as an interpretation of a museum object) was to demonstrate how one museum piece could be explored tactually and what elements of the tactile perception could be represented by using a variety of materials. One of the objectives was to achieve a tactile setting in which, although each piece in the exhibition would speak for itself as an art work, when presented together in the exhibition room, the distinctive pieces would form one big tactile representation of a museum object.

Because the main aim was to explore the tactile information of a selected object through the artists' representations of the tactile information, the art work production techniques were not limited to the object's own. As a general rule of the 'Tactual Explorations' concept, the artists were free to explore different materials in order to achieve the correct effect of their given/chosen interpretation of the tactile properties. Artists could focus on a detail taken from the original piece, or represent the whole piece, in order to form the complete haptic experience they had in mind. Each art work focused on one or more of the following properties acting as the main feature of the art work: vibration, surface texture, surface temperature, shape, slope, hardness, weight, elasticity, and pliability (McLinden and McCall 2002). In addition, the tactile properties of the artists' works were created to supplement the force-feedback of the haptic simulation (which only provides shape information,



Figure 6.4 Haptic bust of the Sophocles bronze.

see Figure 6.4) by adding the missing tactile feedback (which provides information about surface texture and material properties).

The sensation of touch was not limited to hands. Artist Murat Ozkasim noticed this point in the artists' brief and decided to create an art work that would encourage visitors to go one step further. With a tongue-in-cheek approach to Sophocles' form, Murat created edible replicas of this sculpture in order to represent an important – but often neglected – way to identify an object's shape by using the tactile receptors of the human tongue (Figure 6.5). To produce the casting of the chocolate sculptures, Murat first created a replica 6.5 cm high using a rapid prototyping method with technology supplied by 'WOW Academy' of Bradford, one of the sponsors of the event. The chocolate replicas were handed out to visitors.

Haptic Interaction

A good definition of the word 'haptic' – derived from the Greek *haptesthai* which means 'to touch' – is 'relating to or based on the sense of touch' (Merriam-Webster 2007). Haptic technology simulates the sense of touch using computers, creating



Figure 6.5 Murat Ozkasim's edible artwork, entitled 'Takes a lot of Licking', is shown with the 6.5-cm-high rapid-prototyped replica.

a two-way interaction with a device. The study of haptics has emerged from the combined use of robotics and computer graphics to create powerful visualization systems. Today, high performance force-feedback haptic displays are still relatively expensive to produce; however, medium-range ones are becoming more affordable and promise interesting possibilities for the future. As these devices are becoming more widely available, the software is getting easier to use and costs are coming down, and so it is now possible to design systems that introduce these technologies into everyday use. The device that was used on the first 'Tactual Explorations' project is the PHANTOM® Omni™, developed by SensAble Technologies.

At the 'Tactual Explorations' exhibition, Haptics enabled artists and audiences from diverse backgrounds to come together to explore one famous museum object. Even though haptic technologies are relatively new and most of its applications became central to the event, at this exhibition it was used as a medium rather than being the focus of the exhibition. In fact, the physical art works completed the missing tactile elements. Haptic technologies and the physical objects of the exhibition almost existed to improve each other, as a whole augmented reality solution (Figure 6.6).



Figure 6.6 Visitors engaging with the haptic simulation.



Figure 6.7 Bronze bust of Sophocles at the British Museum. Photograph by Iail Onol.

Selected Museum Object

The selected piece for the first 'Tactual Explorations' exhibition (the pilot study), was the bronze bust of Sophocles, currently displayed in Room 22 of the Greek and Roman Antiquities section of the British Museum (see Figure 6.7).

Because the surface is too delicate to be handled regularly and original Greek bronze works on a large scale are quite rare, the bust is displayed in a glass case and touching is strictly forbidden. These restrictions, and the amount of surface detail available, however, make this exhibit a perfect object for the 'Tactual Explorations' project, but it was, of course, necessary to purchase a replica of the bust for use at the exhibition and for the artists to examine physically (see Figure 6.8).

As Morgan (2006) says:

Whilst [the object's] form is well rendered we can only imagine that, even if the bust weren't too delicate to touch, touching it would ultimately disappoint – the hair and beard offering the same cold and disinterested response to physical contact that the nose and lips, chin and cheeks would. A direct replica made available for visitors who are visually impaired would not necessarily make sense as the visitor may not be able to assign visual memories to surface details: how would one know Sophocles is wearing a headband if one could not see it?



Figure 6.8 Replica bust of the bronze bust of Sophocles. Photograph by Isil Onol.

Workshops

As part of the 'Tactual Explorations' exhibition, six workshops were held encouraging everyone, especially museum and gallery workers, school teachers, students and children, to explore some of the techniques behind the exhibits. The workshops also introduced tactile drawing methods, not only to visually impaired people, but to anyone interested in learning these methods. Most of the workshops were suitable for children and all workshops were free of charge. In total, 65 people attended these workshops. The workshop titles and their facilitators were:

- 'Drawing by touch', by Tom Ainsworth
- 'Access to art: Whose responsibility anyway?', by Caglar Kimyoncu
- 'Tactual drawing and mark making', by Carolyn Alexander
- '3D Collage', by Louise Atkinson (Figure 6.9)
- 'Sensory Stories', by Amy Hirst
- 'Tactile Drawing', by Lynn Cox (Figure 6.10)



Figure 6.9 A participant creating work at Louise Atkinson's workshop '3D Collage'.



Figure 6.10 Lynn Cox instructing participants at her workshop 'Tactile Drawing'.

Results

The exhibition provided practical data vital to the progression of my practice-incorporated PhD and engaged audiences relevant to the research (e.g. visually impaired). Special needs schools in and around Huddersfield arranged visits to the exhibition and they gave valuable feedback on their experiences. More than 265 people attended the exhibition during the first five days and another sixty-five attended the workshops. The audience interaction with the art works was observed and recorded and feedback was obtained via questionnaires and a visitors' book.

The majority of the comments in the visitors' book and the feedback forms were related to 'being able to touch'. The only time people referred to the haptic simulation was when they were asked directly. It was important for this project to achieve a transparent use of technology and it was vital that technology did not take over but became merged with the rest of the exhibits.

For research purposes, the data enquiry first looked at the visitors' interaction with the exhibition as a whole and then focused on the results gained from the engagement with the haptic simulation alone. The aim was not to replace the traditional museum display, but to enhance the information conveyed about the exhibit, to a wider, more diverse audience.

Table 6.2 Experience feedback ratings from thirty randomly selected visitors

<i>Experiences</i>	<i>Feedback Ratings</i>				
	<i>SD</i>	<i>D</i>	<i>U</i>	<i>A</i>	<i>SA</i>
Tactile art works enhance the 'haptic' simulation by offering the missing physical information	0	0	0	22	8
Interpreting museum objects through tactile works is a very inclusive approach	0	0	0	21	9
With the help of the tactile art works, the computer interface seemed to vanish	0	0	5	12	13
After interacting with all the art works, I felt I interacted directly with the bust of Sophocles	0	0	2	10	18
I felt that the overall tactile interpretation provided space to add my own interpretation	0	0	0	2	28

Note: Key to responses: SD = strongly disagree; D = disagree; U = undecided, A = agree; SA = strongly agree

Five questions were asked to thirty randomly selected visitors, regardless of their disability, social status or cultural background (Table 6.2). These questions might be considered as 'leading' questions by many researchers, but in order to direct the participants to the use of the 'interface', rather than the technology itself, it was considered necessary to use some kind of guidance in the sentence structure.

Another thirty randomly selected visitors were asked more generic questions about attending museums and their feedback on the 'Tactual Explorations' concept. According to their answers (figures rounded):

- 86 per cent had never been to the British Museum;
- 93 per cent visited the exhibition because of its tactile content;
- 93 per cent had never heard of the word 'haptic';
- 100 per cent had never engaged with a haptic device;
- 100 per cent would like to see other museum objects interpreted in a similar exhibition concept.

Among children and the younger audience, the average time spent with the haptic simulation was ten minutes and the average time spent in the exhibition room was thirty minutes. With adults, the time spent with haptic simulation was 6 minutes and the average time spent in the exhibition room was 25 minutes. In order to keep the visitors experience as genuine as possible, during the observation no questions were asked and therefore the results of this section were arranged as 'younger audience' and 'adults' purely from their appearance. The feedback forms included questions

relating to visitors' age, occupation, and whether they considered themselves to have a disability or not. For the nature of this research, gender was not considered to be relevant and was therefore ignored.

There was also constructive criticism from the visitors. Even though the majority of the people (98 per cent) found the haptic device easy to use, the other 2 per cent expected to be provided with written instructions for using the device. It had not been considered appropriate to do this on the pilot study as it would have changed the results of the data analysis; however, it will be considered in future exhibitions. Some visitors suggested a blind-folded tour of the exhibition and a day allocated to adults only. These suggestions will also be taken into account. Most workshop attendees criticized the limited availability of the workshops; unfortunately, the budget did not allow any additional free workshops. For future events, repeat workshops will be provided in order to open up these activities to more people.

Conclusion

By investigating the effects of a haptic display surrounded by physical art works, the first event of 'Tactual Explorations' attempted to offer a new method of interpretation for museum objects. The exhibition and its workshops were fully accessible and available to visitors free of charge in order to include everyone regardless of their financial or social status. The exhibition was designed especially, but not exclusively, for visually impaired visitors. At the time of commissioning artists, the competition was kept open to all artists regardless of their background and disabilities. The exhibition's ten selected artists came from diverse backgrounds.

A website has been launched providing details of the project and those involved, including the artists, volunteers and sponsors. This website was designed according to accessibility requirements by providing clear design, regular and high contrast versions and passing the XHTML/CSS tests (see www.tactual.org.uk).

A booklet in written format and Braille showing the work in progress was produced as reference material. These were handed out to visitors to the exhibition. Information in this booklet was also included in the audio guide.

The project made a difference by:

- Using augmented reality and haptic technology to enhance access to traditional art form;
- Providing opportunities for people with limited or no sight to have access to art exhibits;
- Bringing interpretation of precious exhibits in larger museums to visitors living away from these museums;
- Exploring the main and hidden aspects of 'touch' in respect of an object that is exhibited visually.

The following were available at the exhibition at all times:

- Braille labels on each exhibit;
- Audio guide (on cassettes, on listening points and available to download);
- Braille version of the exhibition booklet;
- Clear text on printed material and labels;
- Space around each exhibit for wheelchair users;
- Attendants to help visitors with anything from filling in forms to the use of equipment.

The next step for the 'Tactual Explorations' concept is to create further exhibitions that interpret other museum objects by using the experience gained from the pilot study. As well as proposing these exhibitions for the museums where the selected object is located, it is also planned to take these exhibitions to people who live away from these institutions. The changes in the haptic and adaptive technologies and advancement in the research will also be incorporated into these events. Projects with small budgets will not sacrifice accessibility; priority will be given to elements that will make an event more inclusive and clearer. The results and papers of each 'Tactual Explorations' event (including the pilot study) will be made available to museums and galleries as case studies for their future projects.

Acknowledgements

The author is grateful for the haptic programming provided by Alastair Barrow of the Interactive Systems Research Group, University of Reading. All photographs are by Murat Ozkasim, unless otherwise indicated.

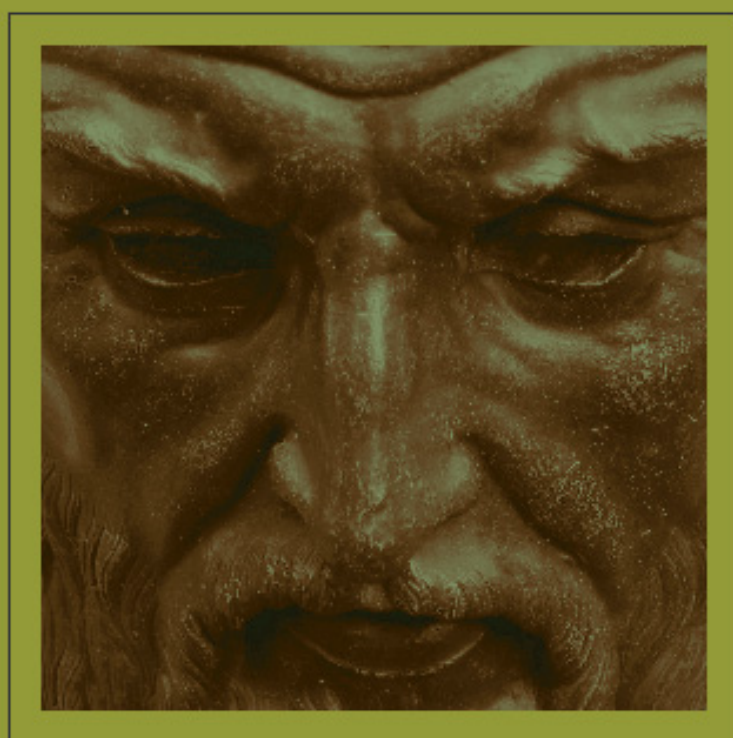
References

- Candlin, F. (2004), 'Don't touch! Hands off! Art, blindness and the conservation of expertise', *Body Society* 10(1): 71–90.
- Carrier, D. (2006), *Museum Skepticism: A History of the Display of Art in Public Galleries*, Durham, NC/London: Duke University Press.
- McLinden, M. and McCall, S. (2002), *Learning through Touch : Supporting Children with Visual Impairment and Additional Difficulties*, London: David Fulton.
- Morgan, B. (2006), 'Tactual Explorations' Exhibition Booklet, Leeds: Footprint Workers Co-operative.
- Merriam-Webster (2007). 'Merriam-Webster's Online Dictionary', available online at <http://www.m-w.com/dictionary> (accessed 15 August 2007).
- Pearce, S.M. (1994), 'Museum objects', in S.M. Pearce (ed.), *Interpreting Objects and Collections*, London/New York: Routledge, pp. 9–11.
- Pearson, A. (2003), 'A museum professional', in E.S. Axel and N.S. Levent (eds), *Art Beyond Sight: A Resource Guide to Art, Creativity, and Visual Impairment*, New York: AFB Press, p. 503.

**APPENDIX 9: TACTUAL EXPLORATIONS WORK IN PROGRESS
BOOKLET**



Tactual Explorations



A tactile interpretation of a museum object

Tactual Explorations

A project created, organised and curated by Isil Onol

Tactual Explorations is a not-for-profit public event which includes a "tactile exhibition" based on a selected museum object – the bust of Sophocles held at the British Museum – which is interpreted by 10 artists through physical and virtual tactile artworks.

There are opportunities to engage with the work through artist talks, workshops and lectures, which are free and open to all. Visitors are encouraged to consider the general concept of tactile exhibitions and to explore the tangible information behind a visual exhibit.

Artists

- Tom Alinsworth
- Carolyn Alexander
- Louise Atkinson
- Lynn Cox
- Deborah Gardner
- Isil Onol
- Murat Ozkasim
- Megha Rajguru
- John Swindells
- Zoha Zokaie

“ I sometimes wonder if the hand is not more sensitive to the beauties of sculpture than the eye. I should think the wonderful rhythmical flow of lines and curves could be more subtly felt than seen. Be this as it may, I know that I can feel the heart-throbs of the ancient Greeks in their marble gods and goddesses. „

Helen Keller, The Story of My Life

Introduction to Tactual Explorations

When we think of art, it tends to be of created objects that appeal visually to the viewer. Despite being characterised by attempts to overthrow convention, modern art overwhelmingly – unquestioningly – seeks the attention of our visual sense.

PhD student Isil Onol presents 'Tactual Explorations', an exhibition designed to appeal to another sense – one that has been oddly ignored throughout the history of modern art; touch. Aimed at both visually impaired and sighted visitors, the event will bring audiences and artists from diverse backgrounds together to explore one famous museum object, the bronze bust of Sophocles (at the British Museum), from different perspectives.

The ten artists involved in 'Tactual Explorations' have been asked to respond to this brief by making artworks that are specifically designed to be touched. This immediately breaks with a fundamental convention of the artistic experience – people are not normally allowed to touch art in galleries.

The intention of the exhibition is to convey 'tactile interpretations' of the bust – a method of examination in which the examiner feels the size or shape or firmness or location of something.

Purposely formulating artworks to be touched opens a wide field of enquiry, as the head of Sophocles is used to make this precious object more tangible and therefore 'real' to all visitors. This perhaps offers a solution to the sometimes-understandable 'hands-off' museum and artistic policies.

There are many ways of achieving this improvement in people's participation with and enjoyment of art. Museums and galleries recognise this and indeed, have to change practices that have

been well established, in order to continue to attract visitors. Technology is increasingly meeting these challenges to enable artists and visitors alike to overcome barriers, real or perceived, and allow ideas to flourish.

Isil Onol presents 'Tactual Explorations' as an extension of her own investigations into 'haptic interactions.' Haptic is from the Greek verb 'to touch' and it should be noted that this most accessible and powerful sense has been largely neglected. Haptic technology provides the possibility of widening access to information and artefacts held in museums. Benefits might include:

Allow rare, fragile or dangerous objects to be handled

Objects can be modeled and then visitors or researchers could feel them.

Improve access for visually impaired people

Such visitors could feel and interact with a much wider range of objects, enriching their experiences in a museum.

Increase the number of artefacts on display

Visitors could experience objects not on display by means of a computer, without taking up museum space.

'Tactual Explorations' is as much about the strange disregard for touch in the arts as it is a challenge to the dominance of the visual. The opening up of the possibilities for an artform that is viewed regardless of its visual appearance charts unmapped territories. This is precisely because to behold an artwork with the sense of touch rather than sight is not a restriction at all but an opening onto a whole new wealth of possibilities that can enable art to continue to challenge and question wider society.

Bronze Bust of Sophocles

The selected piece used as the artists' inspiration in Tactual Explorations is the bronze bust of Sophocles at the British Museum, displayed in room 22 of Greek and Roman Antiquities section. Because the surface is too delicate to be handled regularly, and original Greek bronze works on a large scale are quite rare, the bust is currently displayed behind glass and touching is strictly forbidden. These restrictions and the amount of surface detail available, make this exhibit the perfect object for the Tactual Explorations project and the haptic research.

Sophocles was born about 496 BC in Colonus Hippius (now part of Athens). He was provided with the best traditional aristocratic education. In 468 BC, at the age of 28, he defeated Aeschylus, whose pre-eminence as a tragic poet had long been undisputed,

in a dramatic competition. Sophocles went on to win first prize about 20 times and many second prizes.

His life, which ended in 406 BC at the age of about 90, coincided with the period of Athenian greatness. He numbered among his friends the historian Herodotus, and he was an associate of the statesman Pericles. He was not politically active or militarily inclined, but the Athenians twice elected him to very high military office.

Many modern scholars consider Sophocles the greatest of the Greek tragedians. He is credited with numerous contributions to dramatic technique and innovation. Sophocles also effected a transformation in the spirit and significance of tragedy; thereafter,

Below: The Bronze Bust of Sophocles with the current layout in the Room 22 of British Museum



although religion and morality were still major dramatic themes, the plights, decisions and fates of individuals became the chief interest of Greek tragedy.

The bust is attributable to the Hellenistic period (4th – 1st Century B.C.), when portraits of earlier cultural and political figures were not uncommon. It is probable that this bronze head adorned a library. Bought by the Arundel collection in Constantinople in the 17th Century, it was then owned by Dr Richard Mead and the Earl of Exeter, before being presented to the British Museum in 1760. In all likelihood, from its origins in a Greek library, through its various wealthy owners, to its current residence in the British Museum, it is likely to have been rarely touched by human hands.

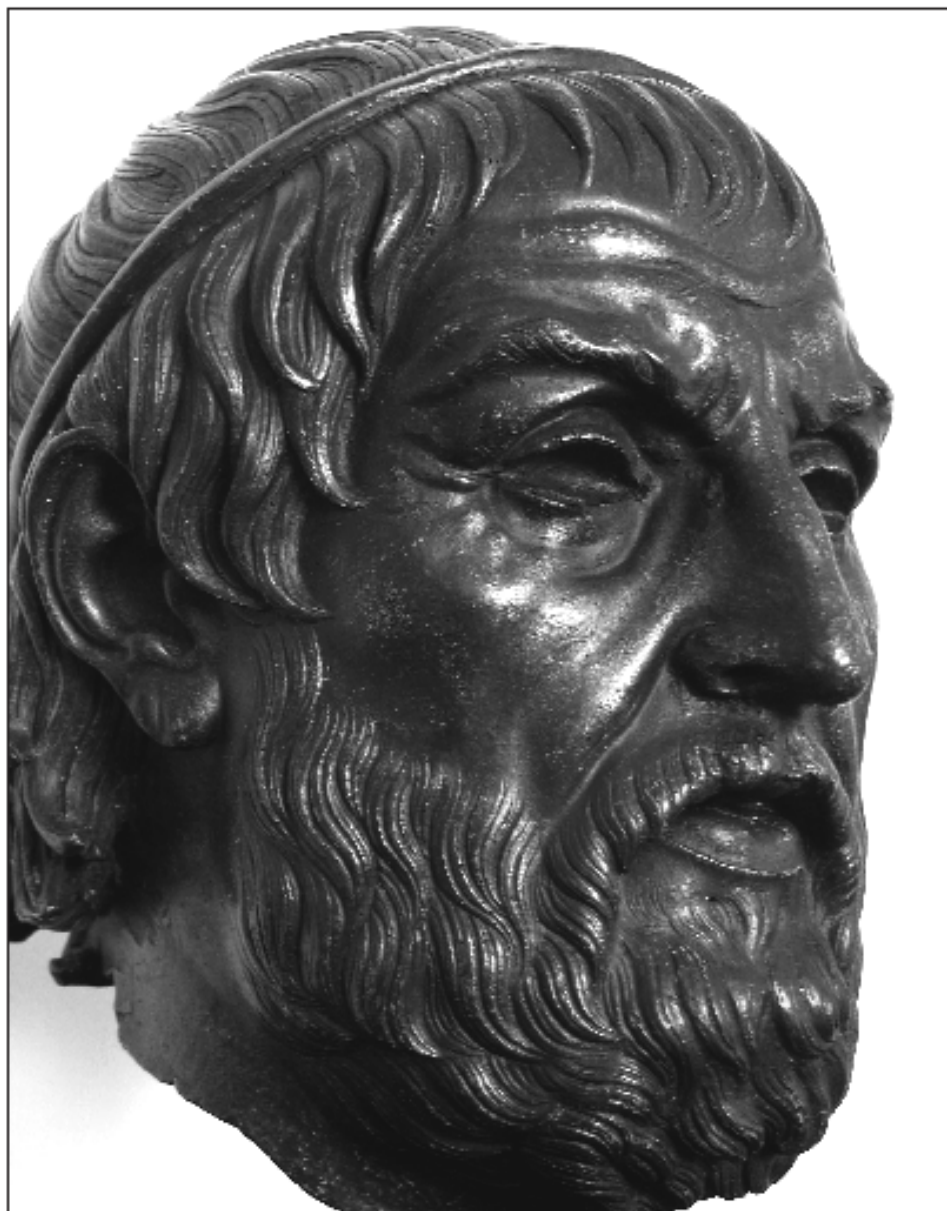
The head is stern faced and, without eyeballs, seems slightly sinister. The beard and head of hair (topped off with a rolled band) are well-executed features, presumably attesting to the great dramatist's status – the rolled band was usually only worn by Greek statesmen. It is, overall, a successful representation, which conveys the importance of this man who died nearly 2500 years ago.

However, the use of this figure in the Tactual Explorations exhibition – reinterpreted to appeal to the sense of touch – highlights the limits of the purely visual art form. Whilst Sophocles form is well rendered we can only imagine that. Even if the bust weren't too delicate to touch, touching it would ultimately disappoint – the hair and beard offering the same cold and disinterested response to physical contact that the nose and lips, chin and cheeks would. A direct replica made available for visitors who are visually impaired would not necessarily make sense as the visitor may not be able to assign visual memories to surface details, how would one know that Sophocles is wearing a headband if one could not see it?

Tactual Explorations aims to address the possibilities opened by an artform that actively encourages the use of touch, in exhibitions where works are not confined on shelves or behind glass. It is interesting that an artwork so old, that has stood the test of time and communicates well within its own limitations, should provide the springboard for an exploration of a very new, very different form of art.

*Next page: Replica Bust of Sophocles produced by the British Museum
Below: The details taken from the same bust*





The Artists



Tom Ainsworth

For Tom Ainsworth, the tactile artwork exploits and encapsulates the tactile sense: It evokes a combination of sensations that stimulate the individual's imagination. Tom feels that the potential for the tactile artwork has not yet been fully realised. Texture is generally used in design merely as a complementary aesthetic and, therefore, its potential as the

dominant mode of perception has been prematurely dismissed. Tom wishes to push the boundaries of the tactile artwork and establish it as a respected medium in its own right.



Carolyn Alexander

Whilst studying Visual Communication at the Glasgow School of Art, Carolyn Alexander focused on concept driven design and specialised in illustration. Carolyn's most recent (ongoing) project "Secrets for the Blind" has developed as an exploration of the use and manipulation of the senses. The main aim of this project is to create art that can be appreciated by the blind as well as the sighted. Carolyn has designed a three dimensional still life that can be handled by both blind and fully sighted persons, but which is inscribed with Braille secrets that only the Braille-readers can decipher.



Louise Atkinson

Louise Atkinson is an artist based at Patrick Studios in Leeds. She works in sculpture and installation using a variety of media including paper, textile media and techniques and new technology. The influence for her work derives from ideas about identity and the human condition, including psychoanalytic and transhumanist theory. She is especially interest-

ed in the 'feminine' qualities of traditional and craft-based materials and techniques within the context of installation. Louise regularly collaborates with other artists and is currently developing a number of projects including several new technology installations, and a site and context based mapping project about cultural identity and food, which will be exhibited at Situation Leeds in 2007. Through specialising in installation she produces multi-sensory experiences with a tactile or audio element as a way of making art more accessible to people with visual impairments. Louise regularly leads art workshops for a range of ages and is due to exhibit at the Berlin Art Fair and County Hall Gallery in London at the end of this year.



Lynn Cox

As well as exhibiting in the Tactual Explorations exhibition, Lynn is displaying a multi-sensory artwork in BlindArt's Sense and Sensuality 2006 Exhibition to be held at the Bankside Gallery in London from the 14th September to 8th of October. Since completing an MA in Fine Art at Wimbledon School of Art, she has exhibited nationally and internationally in London, Glasgow and San Francisco. Lynn's art is informed, but not dominated by her own visual impairment and its associated access work and equality/awareness training. Her mission is to elevate the senses, perceptions and language to a higher status, which is usually reserved for the purely visual.



Deborah Gardner

On gaining a Masters Degree at Newcastle University, Deborah Gardner won a British Council Scholarship to Australia. She then completed the Durham Cathedral Residency and became a member of a London-based artists' co-operative. She is currently Lecturer in Fine Art at Leeds University. Her work has been exhibited in both

group and solo exhibitions in the UK, Europe and overseas.

Recent group exhibitions include work at the Ragged School: Museum of the East End, London (2005) and the Museum of Domestic Design and Architecture (2006). As part of the artists' group That which is Near, she has completed projects in Brussels and Vienna (2004) and is due to exhibit at the Ebersberg Kunstverein in Germany in 2007. The prevailing concern in her work is how sculpture may point to an experience of the body and the physical world. The research continuously draws on a correspondence between ideas of embodiment and the material engagement and tactility of form within sculpture.



Isil Onol

Isil Onol is a graphic information designer and a digital artist living in London. She has been freelancing as a print & interaction designer and a software instructor, and has worked as a part-time lecturer at the University of Huddersfield teaching studio skills, graphic design principals and graphics software to Multimedia and Virtual Reality students.

Isil is currently undertaking a PhD research with the University of Huddersfield. Funded by HEFCE, she has been researching haptic interactions in museums since September 2004. She completed her MSc in Smart Design at the Department of Creative Technologies of the same institution in 2003, and her BA in Graphic Information Design at the University of Westminster in London in 2000. Before going back to academia for her previous master's program, Isil worked as an Interactive Designer at the BBC Creative Services for 3 years, mainly producing character illustrations, developing dynamic web content and taking part in interactive TV projects.

Murat Ozkasim

Murat Ozkasim is a photographer and printmaker. He lives in Leeds, where he operates a photography studio; this commercial work has led to long term assignments in New York and Miami. Murat was born in Turkey and has been living in England for twenty-five years. As an artist his practice reflects a deep interest in inter-cultural harmony. Murat has exhibited widely in the U.K. and abroad. His participation in this project has created a first opportunity to not only employ three dimensions but to research the rich potential of the tactile in the audience's reception of the work and its underlying concepts through direct interaction.



Megha Rajguru

Megha Rajguru's artworks are visual experiments exploring the relationship between humans and objects. Life and death of objects and mechanised people are ideas that loosely form her work. Megha works across a variety of mediums; the still 2D, kinetic 3D and film. Megha's work invites its audience to interact with the art object, in various

ways. The space around the artworks is a strong contributing factor in the meaning it emanates. It generates specific human behavior. Movement in a temple is ritualistic and in a museum it is controlled. The space almost becomes a testing ground for certain human-object interactions. Megha's artworks become alive with meaning when they are placed in certain environments.



John Swindells

John Swindells graduated from Chelsea College of Art in 1998 and continues to produce sculpture specialising in cast bronze. He currently lives in London. His work is held in many private collections and he has recently been commissioned to produce several public sculptures. He also contributes to TV and film and hopes to soon produce his own Art documentary programmes. For the past three years he's tutored Sculpture, Drawing and Painting at the Slade School of Fine Art.



Zoha Zokale

After finishing her first degree in Textile Engineering in her home town Tehran in 2004, Zoha moved to London to continue her higher education. She is currently an MFA student in Textiles at the Goldsmiths College, University of London. Growing up after the 1979 Islamic Revolution in Iran, Zoha is the child of contrary forces. Through her art Zoha

tries to envision an alternative world: A world of physical engagement of senses of simple aesthetic pleasures in touch and vision. Nostalgia for Zoha is not a disease but a real inspiration.

Exhibition: Work in Progress

This section of the booklet aims to provide an overview of the artists' work and how they approached to their medium at the time of production. It is composed from the artists' own description of their artwork

The Artist's Brief was to research and develop high profile tactile artwork or artwork configurations reflecting the surface and tactile properties of the Sophocles bust. Isil Onol's demonstration of the sense of touch through a haptic device is the starting piece of the exhibition. The physical objects are created not only to complete the tangible sensations that are missing in the haptic simulation experience, but also to explore the main and hidden aspects of "touch" in an object that is exhibited. Each work talks for itself individually, and when presented together in the exhibition room, they can also act as distinctive pieces of "one big tactile setting" that represents a selected museum object.

Designed to communicate key elements of the Sophocles bust through touch (and also influenced by the ancient African 'Lukasa' or memory board), Tom Ainsworth has constructed interactive pieces that provide feedback of internal textures, creating

a more engaging, tactile experience. Introducing a drawing exercise to the exhibition space provides further engagement with each object. This provides the public, as individuals, the opportunity to make-their-mark on this piece as a collective.

Made from solid latex, Carolyn Alexander's piece "Unravelled" is intended to transform the original art piece into something invitingly tactile and not overly precious. Taking a section of the original head approx 'four fingers wide' (starting at the nape of the neck and running to just under the chin), the head is transformed into a long wave. In this new position viewers will be able to run their fingers along the scalp and face in one swift movement.

Louise Atkinson has decided to focus specifically on the tactile qualities of hair and how this can be used as an art material. The sculpture is a large hairball measuring approximately 60cm in diameter. Louise is particularly interested in the way that hair is related to identity, being as it is intrinsically linked, both literally, in containing our genetic code, and socially, in the way that we differentiate or connect ourselves with others in terms of style, class, etc. Hair also has connections with ethnicity as a social

Below: Work in progress image of "Unravelled" by Carolyn Alexander



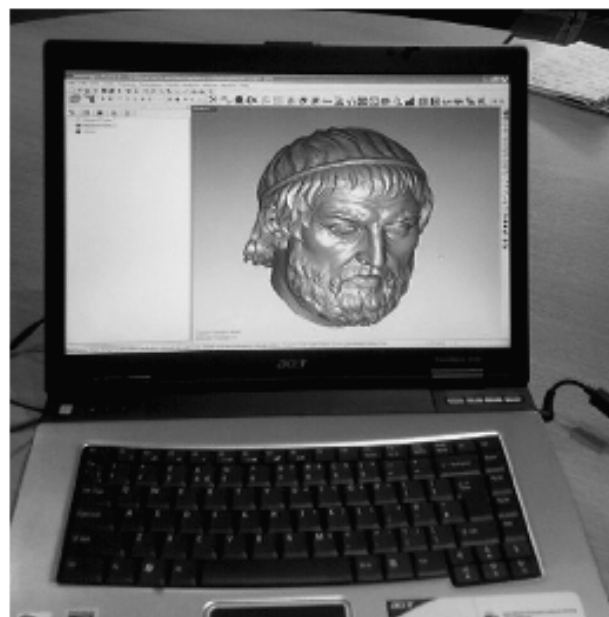
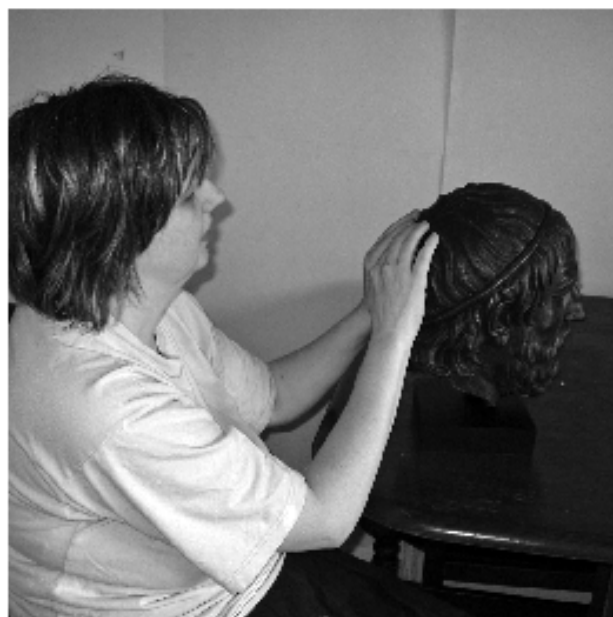
construct and can be used as a political/ideological statement, such as dreadlocks or a Mohican. In extreme cases of illness or aging, loss of hair is associated with weakness or loss of control, creating demoralizing and depersonalizing effects. As an extension of personal style/personality, hair is often styled in a way to produce desire/attraction in others. However, out of context, such as in food, or on soap, hair becomes transgressive waste material, creating repulsion. The hairball suggests the degradation of the body and the waste material produced due to the passage of time and the aging process.

Lynn Cox created a wire representation of the Poet's head. The emphasis has been to highlight the hair, beard and mustache of the head so that their tactile impact is greater than the rest of the features. In addition, the heads flexibility gives psychologically a different perspective from the original. Whilst touching the artwork vibrations are created which start an audio recording made about touching the original artwork. Cox draws awareness to the limitations of the original bronze bust for visually impaired people.

Deborah Gardner points to an experience of the body and physical world by using an enlarged scale and wax so that it may give the piece a fat/flesh like quality. This sculpture was initially constructed and molded in materials such as clay, fibres and cloth. Evidence of surface, which is 'felt' and 'live' is vital. The form focuses on the folds and furrows caused by the wrinkled brow and ageing face, the line of the rolled band binding the layers of hair and the twists and curls of hair and beard. The intention is that the viewer encircles the form running their hands over the folds, curves and furrows so that they may become engaged in a process, which goes beyond a question of observing but of experiencing form/being in its immediacy.

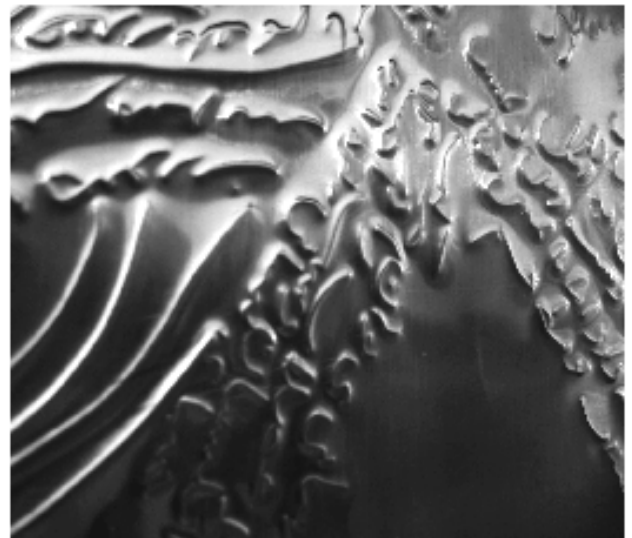
As well as Sophocles's haptic simulation, Isil Onol investigated the tactually hidden values of the surface and created an engraved metal plaque of a section from Sophocles's face. Isil says "most of the surface details under and around the eyes are actually visual details. Although a seeing eye completes these details as bumps through shadows, the surface in that area is

Below: Lynn Cox is examining the Bust of Sophocles before creating her work "The Wiry Old Man" (left); 3D model of the bust, created at Metropolitan Works, London, for Isil Onol's "Haptic Bust of Sophocles" work (right)





Work in progress images (clockwise from top left): "Expression" by Tom Alnswoth; "Vivid Head" by Deborah Gardner; "The Tale Of Its Touch" by Zoha Zokale; and "Inverted Head (Sophocles)" by John Swindells





very smooth. The texture cannot be easily seen by touch, they cannot be felt by finger tips easily. Therefore instead of working with a mould cast from the object, I worked from a photograph that captures this information." The relief image was engraved after the photograph was manipulated and a line drawing is made to enhance the shadows and highlights on the surface. The two pieces will be used together for Isil's research into haptic interactions with museum objects, later in the year.

Murat Ozkasm's work that will be addressing the tactile receptors on human tongue involved 3D printing/rapid prototyping process. With a slight tongue-in-cheek approach to Sophocles's form, Murat proposed to create edible replicas of this sculpture in order to represent a very important but usually neglected way to identify an object's shape.

Megha Rajguru has been working on creating a 'reconstruction' entitled "Sophocles. Circa 2000". Sitting on a plinth, this work gives the image of the playwright an elevated status it rightfully deserves. But, the cranium, the brain that sits inside it and the growth of follicles through the skin forms the tactile reality of this work. The piece is not shielded from its audience. It is in the open.



Murat Ozkasm's work in progress image shows the scaled-down 3D print / rapid prototyping of the laser-scanned bust of Sophocles (left); Megha Rajguru's work "Sophocles. Circa 2000" in progress image (above)

A sign on the plinth says 'Rub the top of Sophocles head THREE TIMES with your index finger to gain wisdom'. It is an inviting sign. This work tests the human psychology of handling objects: one that places an exclusive, fragile head in a glass case in a museum, and another that shows a keen, yet hesitating reaction to a real, hairy head that is available to be touched.

The process of making John Swindells's "Inverted Head" sculpture involved inverting and exposing a copy of the bust of Sophocles so that all the surface detail of the head is shown in a more abstract but still complete form. The loose rubber skin is placed over a rigid plaster and wood structure that allows it to be mounted like the original bronze. With this work John aims to emphasize a tactile imperative that generates meaning in the relationship between material, technique and form.

In order to further focus on engagement through touch Zoha Zokaie looked at the qualities like texture, slopes and curves in her two works. A combination of metal sheets and metal wires are what she has chosen to work with in order to bring this work to life. In one piece Zoha chose to work specifically on the curves representing the lines on the sculpture's face. In her second piece Zoha has mainly focused on the textures created by the hair both on the face and on the head. Persian calligraphy is used in between the straight lines of the hair. The text explains the artist's feelings when gazing at the sculpture.

Exhibition reviews

Touching Paper, by Brian Morgan

Tactual Explorations is the latest in a growing movement that has been deemed 'touch art', numerous museums and galleries now offer tactile opportunities as part of their access provision.

Alongside the requirement to provide opportunities for people with limited or no sight to have access to art exhibits, many explanations have been given for this growth – touch may be considered to be the more basic, easier provision; it could also be a different route to knowledge. How can we begin to approach touching objects without being absorbed by our visual sense, where touch concerns thought as well as feeling?

In examining the 'tactile interpretations' of the bust of Sophocles showing in the Tactual Explorations exhibition, the 'toucher' (as opposed to spectator or listener) is given the opportunity to really use this most neglected of the senses. There is an intention to explore the main and hidden aspects of touch in the exhibited objects.

Of all the senses, touch is perhaps the least understood. Scientists are still trying to answer fundamental questions about touch and how tactile sensations are perceived. Yet, it has been argued that touch is our first sense.

"Touch comes before sight, before speech. It is the first language and the last, and it always tells the truth"

Margaret Atwood, The Blind Assassin

Touch, more than any other sense, is 'direct access' and even assimilation. It actively engages us. Touch can reveal truths to us hidden by our other senses. Whereas the spectator and the listener are dealing with projections or symbols of things, the 'toucher' is dealing with the thing itself.

There is truth in physical sensation. Yet most of us would say we rely primarily on our sight to know what's going on around us. This is partly because we so readily neglect our sense of touch. We are always touching something, but we discount it: on the seafloor, we see the sea and horizon, we hear the waves and

seagulls, but we ignore the shingle beneath our feet unless we shift our weight and notice it again.

'What we seek in art as in thought is truth' according to Hegel. Artistic truth is always concrete, always practical, always, in its way, silent (even when expressed in words or sounds); it is the truth of being, inasmuch as we are able to grasp it.

Beauty is not everything; technique is not everything. Art is first and foremost revelation rather than craft or ability; it is the establishing or the implementation of a truth.

The commissions included here in Tactual Explorations each strive for their own truthful interpretation of the bust of Sophocles. By their very nature they are "inclusive exhibits". Tom Ainsworth has constructed interactive pieces that provide feedback of internal textures, creating a more engaging, tactile experience. Louise Atkinson focuses on a large area of hair (an important part of an individual's identity). Deborah Gardner, using an enlarged scale and wax, gives the piece a fat/flesh like quality.

And technology has a role to play in the exhibition too. It is not just a tool – new technologies are creating new patterns of behavior (we might say – new truths). Computers do things for us, but they increasingly are doing things to us.

The use of the bust of Sophocles in Tactual Explorations – reinterpreted by the artists to appeal to the sense of touch – highlights the limits of the purely visual art form. By visiting this unique exhibition, you may get closer to the precious bust of Sophocles than you would ever hope to at the British Museum.

Tactual Explorations: A Review by Mike Watson

In Sophocles's Greek tragedy 'Oedipus the King' Oedipus is tricked by fate into killing his father and marrying his mother, despite all his efforts to avoid the destiny that was revealed to him as a child. The message conveyed in this myth is that no-one can escape the fate ascribed to them; it is a governing principle, no less than the laws of physics and the authority of judicial law govern modernist thought. Human achievement; science, art, philosophy, spirituality can be seen as a continued effort to break the spell of fate, or scientific law through cunning and endeavor.

The modern artwork has aimed, by developing ever-new methods of communication to constantly escape fate and law; to challenge authority. In order for art to constantly be at the vanguard of progress... for it to challenge society through its non-compliance, it must always strive to develop new and novel ways of confronting the receiving public.

Artistic modernism presents the continuous attempt to conceive of an artwork that is radically new and challenging. Ever since Duchamp presented a urinal to an open exhibition in New York, the new has been so thoroughly explored that it is now argued that all the potential possibilities have been exhausted...The 'death' of painting, modernism, even art itself, is bandied around freely in academic and creative circles. Yet despite this, recent breakthroughs have been made in the fields of performance, video, and sonic arts. The latter achieving something that no other fine art medium has done previously – it appeals to a sense other than vision. Perhaps art is not dead, but has merely metamorphosed.

Technology has provided many new methods of confrontation, and the emerging field of haptic technology is amongst the most exciting. From the Greek verb *Haptos*, to touch, haptic technology literally means 'technology relating to the sense of touch'. PhD student Isil Onol researches haptic interactions with museum objects at the University of Huddersfield, and here curates an exhibition designed to appeal to the touch.

Building upon Onol's research, the ten artists participating in 'Tactual Explorations' have been invited to make a personal response to the same museum artefact, the bronze bust of Sophocles that resides behind glass in the British Museum. The artists involved have been asked to respond to this by producing

artworks specifically designed to be touched. This immediately breaks with a fundamental convention of the artistic experience – people are not normally allowed to touch art in galleries.

Specifically formulating artworks to be touched opens a wide field of enquiry, as the head of Sophocles is used to test the boundaries of restrictive museum and artistic practices. The artists involved in 'Tactual Explorations' provide a wide response to the brief. Louise Atkinson focuses on the large area of hair suggested in the original bronze sculpture. Using hair as a material Atkinson has produced a large 'hairball', and invites the audience to touch it, perhaps squeamishly, as hair has a capacity to disgust – like dead matter.

Artists John Swindells and Deborah Gardner play with the form of the face and head in their works. These pieces, by manipulating the scale and shape of the Sophocles bust, invite audience participation as the viewer can run their hands across the surfaces of the sculptures in a physical exploration of these strange forms.

Such an exploration brings to mind another Greek myth. In Homer's *Odyssey*, as the Greek hero Odysseus's ship comes close to the lure of the sirens, a danger emerges that he and his oarsmen may become distracted by the sirens song, which may in turn hamper their homeward journey. To avoid this risk Odysseus plugs the ears of his oarsmen and blindfolds their eyes, whilst having himself bound to the mast so he can supervise their journey without succumbing to the sirens song. In this myth it is the blindness of the oarsmen that saves Odysseus... they are opened to a strength of capability they would not otherwise have possessed precisely because they are blinded and dependent now only on touch. At the same time Odysseus can see and hear the sirens but, strapped to the mast, cannot get any closer to them... his sight therefore becomes an annoyance, demonstrating to him his limitations.

The work in *Tactual Explorations* is, perhaps, best seen blind – as well as offering touchable exhibits, the exhibition includes an audio guide and Braille labels for visually impaired visitors.

Workshops

As part of this exhibition, 6 workshops were organised, encouraging museum and gallery workers, school teachers, students, children and other visitors to explore some of the techniques behind the exhibits; as well as introducing tactile drawing methods for visually impaired people and for anyone who is interested in learning these methods. Some of the workshops are also suitable for children.

To support this inclusive event, a "Workshops for All" concept was developed. Therefore all workshops are offered free of charge to anyone regardless of their skills, knowledge, ability, and economic / social status, provided they booked in advance.

Workshop 1: Drawing by touch by Tom Ainsworth

Participants will use the processes and actions of drawing (creating, sharing and developing) to investigate the relationship between tactile and visual information. Drawings will be based upon objects concealed from view, thus requiring the hand to act as a lens – focusing on the otherwise hidden information. The workshop is aimed at all ages, and at all levels of drawing ability.

Workshop 2: Access to art: Whose responsibility anyway? by Caglar Kimyoncu

As an artist, how do you think about your audience? As a curator, how do access issues influence choices about venue, schedule and formats? Is it part of your initial concept, or something you add on at the end? There are over ten million disabled people in the UK, representing a huge potential audience that is often ignored. This workshop looks at some of the myths about making art accessible, and explores creative solutions (cheap, easy, fun) to reach a wider audience.

Workshop 3: Tactual drawing and mark making by Carolyn Alexander

This workshop explores the idea of lines and shapes that can be experienced by the fingers instead of the eyes. Initially, a drawing is scraped into a thin layer of clay including any amount of tone,

line or texture desired using a variety of found objects. Once completed, the participant will be assisted in making a cast of the drawing, which when separated will leave them with a tactile drawing on the plaster. The participants can then choose whether to paint the drawing in anyway they like or leave it pure and untouched.

Workshop 4: 3D Collage by Louise Atkinson

The workshop will focus on creating 3D installation using 2D imagery. Participants will create sculptures for a collaborative installation using waste material such as cardboard and packaging. Sculptures will be made using 2D images, including collage by Braques and Picasso, as inspiration. Participants will also be introduced to other artist's working in a similar genre such as Kurt Schwitters with 'Merzbau'. Participants are encouraged to bring along some cardboard.

Workshop 5: Sensory Stories by Amy Hirst

This workshop explores different tactile experiences and how they inspire imaginations or trigger memory and use the touch and feel of these materials / objects to tell a story.

Workshop 6: Tactile Drawing by Lynn Cox

This workshop introduces people to techniques of drawing with yarns, wool, string, ribbons and wire through paper, plastic, cloth and tapestry canvas. By the end of the workshop participants will have made their own drawing which they can take away with them if they wish. The workshop is appropriate for those of all age's from 3 upwards and is particularly suitable for those with a visual impairment.

Acknowledgements and Credits

First of all I must thank Matthew not only for standing by me every day and giving me the support and encouragement I needed throughout the project, but also for his practical help with the workload. I would like to thank my sister Isin for her artistic advice, emotional support and most importantly her sense of humour that kept me going while working on this project. Also many thanks to Caglar for solving problems, offering solutions, listening and more precisely, being there for me.

Isin

I am grateful for suggestions, comments, and contributions from the following friends and colleagues:

Special Thanks to:

Marc Collinson, Alex Kelly, Brian Morgan, Ann Marie Shillito, Christopher & Vera Simmons, Gareth Young, Lorna Walker, and all the commissioned artists and workshop facilitators whose expertise, skills and creativity have made this project possible.

And to:

Paul Atkinson, University of Huddersfield
Melanie Brooke, North Light Gallery
Adam Foley, Starcom Mediavest
Derek Hales, University of Huddersfield
Peter Higgs, British Museum
Adam Levy, Art Through Touch
Caroline Perry, University of Huddersfield
John Rumsby, Tolson Museum
Antony, Grenville shop, British Museum

PROJECT CREDITS / CONTRIBUTORS

Creative / Content Writers

Brian Morgan (Art specialist / Health consultant)
Mike Watson (Art Critic)

Haptic Programming:

Alastair Barrow, University of Reading

Legal Advice:

Andrea Sims, University of Huddersfield

Website Design

Alex Kelly, Oxidise

Accessibility consultant:

Lynn Cox, It's All Art Related (IAAR)

Sponsors / Funders

University of Huddersfield

Metropolitan Works

Gareth Young, CDCE Ltd

Christopher Simmons, LFE Ltd

Donations from friends

Designed by Isin Onol, London and printed in UK



www.tactical.org.uk